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"SOUTH AFRICA'S WAR EFFORT"

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This magazine is dedicated to the interpretation, in authentic and popular form, with extensive illustrations, of geography in its widest sense, first of Canada, then of the rest of the British Commonwealth, and other parts of the world in which Canada has special interest.

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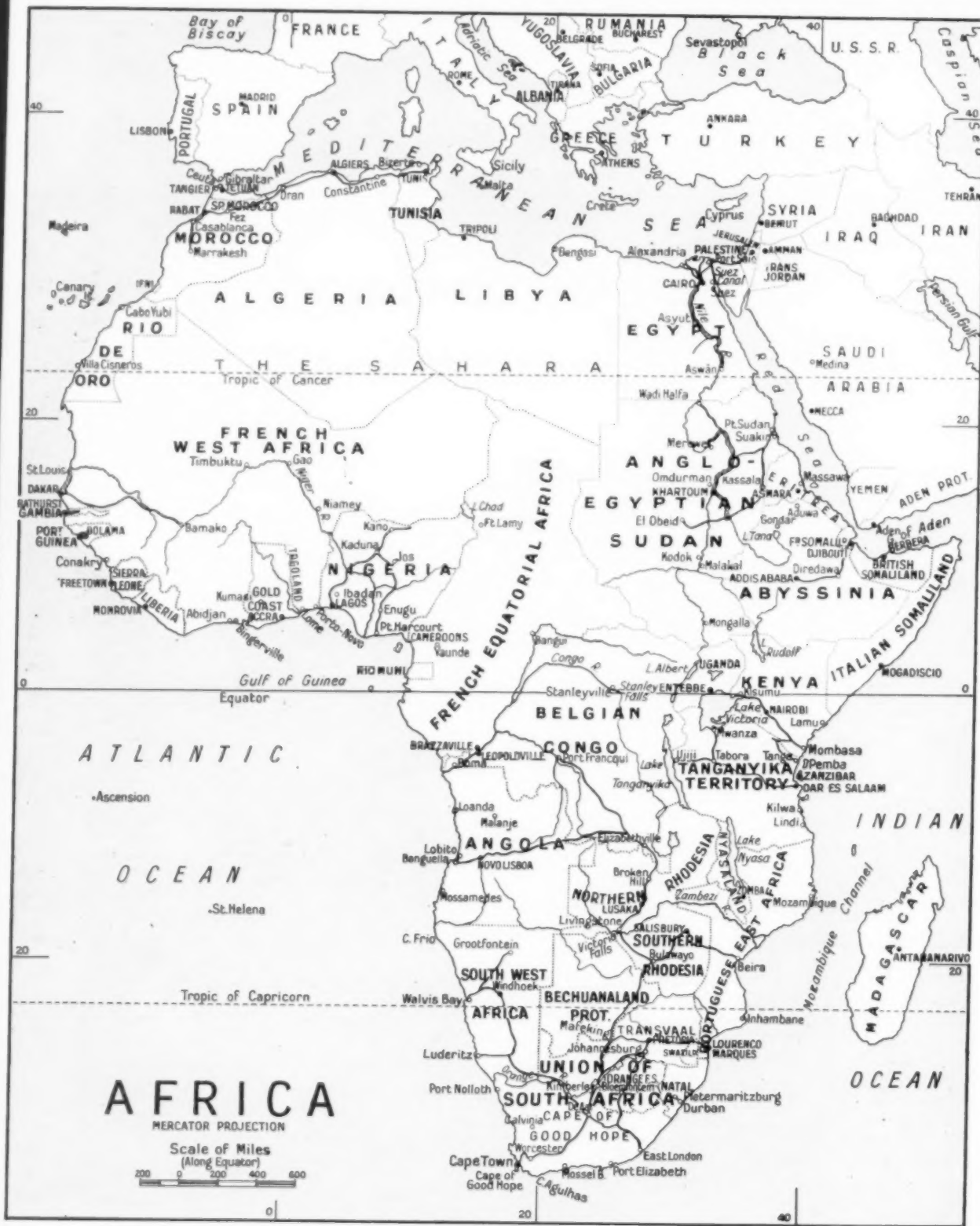
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SOUTH AFRICA'S WAR EFFORT

by Major The Hon. Piet van der Byl

GREAT Britain and France declared war on Nazi Germany on September 3rd, 1939. South Africa, after a momentous debate in its House of Assembly, followed suit on the following day. General Hertzog, the Prime Minister, resigned, and General Smuts, that great South African statesman and international figure, became Premier in his stead.

On that fateful day in early September the Union was at the cross-roads. Had she faltered and taken the wrong turning, no man can say to what depths of chaos wrong policies would have led her. For here, as in so many other parts of the world, the Nazis had been at their deadly work of white-anting, of playing upon half-forgotten differences, of sowing the seeds of hatred and bitterness. South Africa was fruitful soil for this work — for hers is a population composed predominantly of two European races whose past history had not always been one of co-operation. The declaration of war against Germany was, therefore, an historic decision, and, to understand its full significance, one must refer briefly to South Africa's chequered history.

From 1652 until 1795 the Cape Colony was ruled by the Dutch East India Company, which drew its settlers from many parts of Europe, but chiefly from the Netherlands, Western Germany and Huguenot France. In the course of time, from the fusion of these European races, there was born the Afrikaner nation — a vigorous people, who have since developed Afrikaans as a spoken language of their own, and one of the two official languages of the Union.

To-day the South African population has a large percentage of people of British descent — some born overseas, others born in South Africa of English-speaking parents. Whilst in the beginning the Afrikaner nation came from the fusion of the three races mentioned, to-day, after the arrival of the British, there is a great infusion of the latter blood, and at present the Afrikaner is, in many cases, the outcome of the fusion of the four races and he is by nature a born fighting man.

During this transition period, the Cape Colony had changed hands more than once. In 1806 it was finally occupied by the British. For thirty years Briton and Afrikaner lived together in the Cape Colony. The Afrikaner, however, was to an increasing extent finding British rule irksome — he could not, for example, reconcile himself to the way in which the British emancipated the slaves — and finally there came the Great Trek — a migration to the hinterland of a great number of the Afrikaans-speaking population. The causes of the Great Trek were many, but chiefly a fundamental disagreement with the policies adopted by the British authorities in matters affecting the Dutch-speaking section.

Henceforth the history of South Africa turns mainly upon attempts to federate the various British Colonies and the northern republics — attempts which one by one failed. An added tempo was given to an already difficult situation by the rivalry attendant upon the opening-up in 1886 of the Witwatersrand Goldfields in the South African Republic. This difficult situation was made dangerous by an event both sad and deplorable — the Jameson Raid — which completely destroyed any goodwill and trust that the Afrikaans-speaking section had in British methods and the repercussions of which are to-day still apparent. The Jameson Raid inevitably led to the Boer War — a long and bitter struggle — after which the British in 1902 annexed the Orange Free State and the Transvaal and gave them self-government in 1907. Union was not accomplished until 1910, when, under the Premiership of General Louis Botha, there came into being the new Union of South Africa.

But Union did not bring an end to South Africa's political troubles — there now followed a period of vicissitudes — the formation by General Hertzog of a Nationalist Party; a rebellion at the outbreak of the war of 1914-18; the coalition of Labour and the Nationalists in 1924 which brought down the Smuts Government. In 1933 General Hertzog and General



The Prime Minister of the Union, Field-Marshal the Right Honourable J. C. Smuts, sitting for Captain Neville Lewis, one of South Africa's official war artists.

Smuts formed a coalition Government which remained in power until the outbreak of the present war. Meanwhile, by the Status Act, South Africa had acquired those sovereign powers offered to all the Dominions by the Statute of Westminster in 1931.

South Africa has had to go through stormy waters. The Nationalist Party, whose chief object was the attainment of sovereign independence, and whose aim to-day is the attainment of a republic, has long been powerful; in the last war, as in this, it was a force against South Africa's participation. The Afrikaner section of the population is split to-day: one portion is politically allied with the English-speaking section, while a spirit of isolationism still burns fiercely in the other. South African participation in the war, has, by the nature of the case, greatly accentuated the unfortunate split.

The Union's decision to take part in the war, in the light of these facts, is thus vastly significant.

The importance of South Africa's strategical position cannot be overestimated. The southern part of our continent is at the apex of the Indian and the Atlantic Oceans, and commands Great Britain's alternative route to her valuable eastern possessions. If Britain temporarily lost control of the Suez Canal, the Cape route to the East would become a lifeline second only in importance to the sea route between the United States of America and England. The port of Cape Town, as well as Durban and other harbours along the East Coast to-day constitutes a vital link in the sea communications of the world.

When General Smuts became Prime Minister at the outbreak of war, he assumed also the Portfolio of Defence, as well as of External Affairs. A formidable task faced him, for in September, 1939, South Africa's defences were in a dormant state. The Union was practically unarmed, an easy prey to the predaceous Nazis.

SOUTH AFRICA'S WAR EFFORT

To-day the situation is transformed. Under General Smuts' masterful guidance a new army has arisen — an army bigger and better equipped than any before in South African annals. Out of a total white population in the Union of two millions there are 190,000 volunteers serving full time in its Defence Forces inside and outside the Union. In addition, 43,000 are serving part time within our borders, — making a grand total of 233,000, i.e., over 11½ per cent of our white population. All the complex branches of the modern army are there — each in itself a model of efficiency — armoured fighting vehicle units, motor-cycle units, signallers and all auxiliary services as well as those famous infantry regiments which fought so magnificently at Delville Wood in 1917. A big percentage of South Africa's fighting men to-day are the sons of those tens of thousands of Boer fathers who, under their old republican leaders, fought against Germany in South-west Africa and East Africa during the last war, as well as in

France and made Delville Wood a name that will never be forgotten in our history. In this army of South Africa's there has been built up a tradition of determined fighting and the will to victory; it has equipment second to none in the world; its mechanical transport is so comprehensive and so well supplied that its fighting units in Abyssinia were completely mechanized and 100 per cent mobile: supplies came forward day and night from the bases established in Kenya. (These bases in turn are supplied by land, sea and air from the Union.) In its triumphal march through Abyssinia the Springbok Army (as our fighting men are called) has amply shown its worth. It was in the vanguard during the march into Addis Ababa and into Amba Alagi — Mussolini's last stronghold in Abyssinia. To-day, a formidable fighting force, the Army of the Union is on the threshold of new battles and new successes. The vanguard of a big force is already in Egypt.

Side by side with this new army and

South African soldiers are cheerful men.





A goat that had belonged to the Italian occupants of Hobok makes friends with the victorious South African troops. Some soldiers using a helmet to give the goat, which was injured in the attack, a drink of water.

South African soldiers exchange cigarettes with the Italian prisoners.





"Cleaning up" after battle. A typical scene which follows an action: a queue awaits the ministrations of the regimental barber.

Infantrymen who captured an Italian gun position examining one of the weapons in which a shell still remains.





A meeting of the "Organizers of Victory" at Amba Alagi. Left to right:—Officer Commanding Imperial Force at Amba Alagi, Officer Commanding South African troops, and a South African Regimental Commanding Officer.

Members of a South African armoured car, ambushed while on a patrol near the Turbi Hills, discussing their narrow escape with the Officer Commanding and Intelligence Officer.



Cave — equipped with electric light and refrigerator — used as headquarters by the Duke of Aosta when the Imperial forces bombarded Amba Alagi.

working in close co-operation with it is the small but powerful South African Air Force, which has been doing such sterling work in Kenya and Abyssinia. There are few aerodromes in Abyssinia which do not bear the mark of its bombs. Its pilots, famed for their skill and daring, have won the highest honours. Sir Archibald Sinclair, the British Secretary of State for Air has said of it: "When the Italians come to reckon up the factors which lost them an Empire, they will place high on the list the South African Air Force". To-day it is co-operating with the Royal Air Force in the defence of Egypt.

A note here on South Africa's part in the training of Empire airmen will be of interest.

At the outbreak of war the Union Government considered that the Union could play a greater part in the training of Empire airmen by remaining outside the Empire air-training scheme. This policy has been carried out. But, to-day, despite the country's non-participation in the scheme, many thousands of British airmen are being trained within our boundaries. By the end of 1941 the number of air-training camps and aerodromes in the Union will have been multiplied several times, and South Africa will be turning out her share of pilots, gunners and observers which will bring ultimate victory to our cause.

The South African Air Force and the Royal Air Force are training side by side. They remain separate units, but each is getting the benefit of the other's knowledge and methods of training.

Typical South African bomber pilots. It is of such men as these that Sir Archibald Sinclair, British Secretary of State for Air, has said: "When the Italians come to reckon up the factors which cost them an Empire, they will place high on the list the South African Air Force."

Below:—Reconnaissance aircraft of the South African Air Force pass one another on patrol.





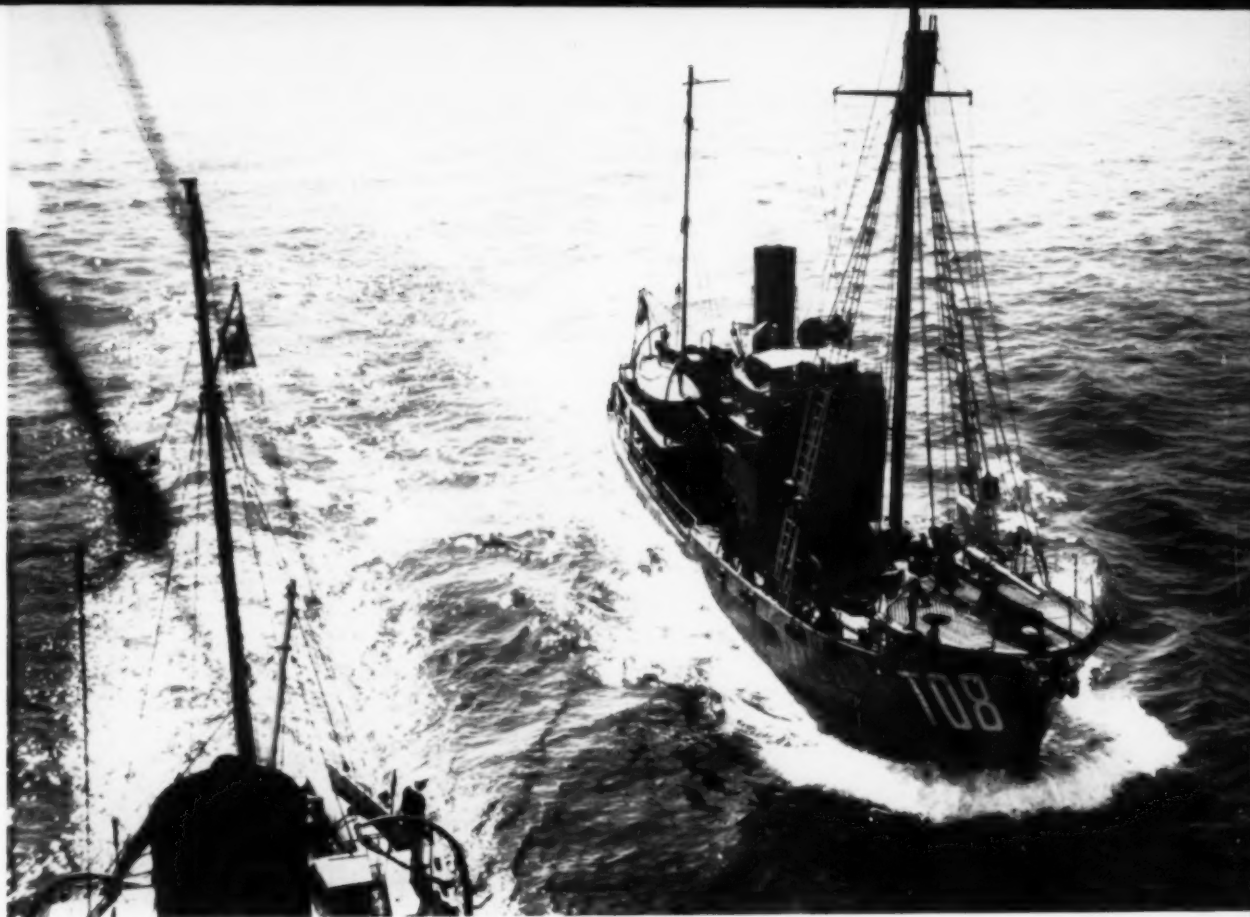
With a South African minesweeping flotilla. Semaphore signals between minesweepers

The Union's Seaward Defence Force is composed of minesweepers and anti-submarine vessels. Both are playing a great part in helping to keep the lifelines of the Allies free from the menace of submarine and mine. Night and day these small craft, ever alert, sail the seas. The minefields they have found and swept up show how ever necessary is their work. In the Mediterranean South African anti-submarine vessels are to-day co-operating with the British Navy in sweeping Mussolini from his *mare nostrum*. The sympathy of all South Africans has gone out to the dependants of men who lost their lives when, not long ago, one of these brave vessels was lost by enemy action.

It is not only South Africa's menfolk who are playing their part in this great struggle. The women of South Africa, too, are proving their worth. As motor-transport drivers, despatch-riders, canteen workers — in all these and many other branches — the members of the South African Women's Auxiliary Services are doing vital work. Their sister organization —

the Women's Auxiliary Air Force — is playing its part in strengthening and building up the South African Air Force. In the factories, too, the women of South Africa are working with a will, replacing their fighting menfolk wherever possible.

South Africa's industrial war effort has been no less remarkable. When the Union declared war, it was realized that she would have to be responsible for the equipping of her own army. The pessimists in our midst said at once: "Impossible". But the miracle has happened. Under the aegis of Dr. H. J. van der Bijl, Director-General of War Supplies, the factories of the Union have been galvanized with new energy. It was the task of Dr. van der Bijl, in peace-time controller of the Union's great network of electric power stations and steelworks, to build up our war supplies and factories. The work was started with practically nothing in hand; but to-day the whole of the Union Army has been equipped and supplied with boots, socks, uniforms, comforts, beds and mattresses, bully beef, canned fish, fruit,



A vessel of South Africa's Seaward Defence Force. A minesweeper coming alongside a companion ship, preparing to "pass sweep".

biscuits and all other supplies for the field commissariat. More than this — armoured cars are being built from our own steel on chasses imported from Canada. Mortars and hand grenades are being turned out in an ever-increasing stream. Guns for our Army in the field are being made entirely in South Africa and recently the first battery of howitzers was delivered to the Army — howitzers made entirely in the Union! It would have seemed impossible only two years ago. But Dr. van der Bijl has shown that the industrial potentialities of the Union are limitless. To-day production is beginning on the manufacture of anti-tank guns.

Every suitable factory in the Union, both large and small, is to-day making the materials of war. In the manufacture of small arms ammunition, the factories of South Africa have exceeded all expectations; for they have produced sufficient not

only for the army of the Union but also quantities to throw into the great pool of Commonwealth resources. Large numbers of bombs of all sizes are being made in South Africa, and the aerodromes of Abyssinia bear testimony to their effectiveness. From range-finders to cans, from shells to blankets, all the diverse machinery of war is being efficiently turned out.



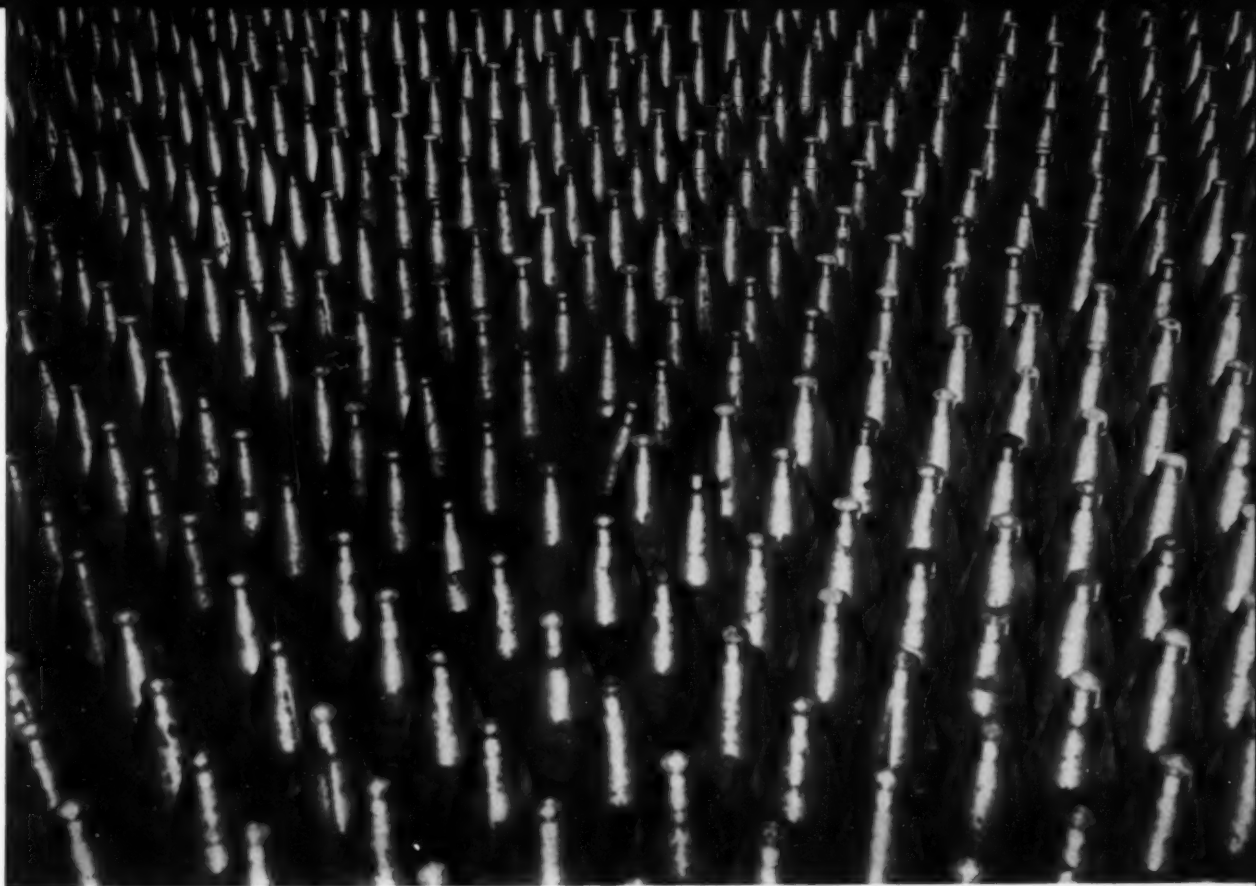
Many hundreds of armoured cars, built of South African manufactured steel, are now being turned out in South African factories. A number of armoured cars nearing completion.



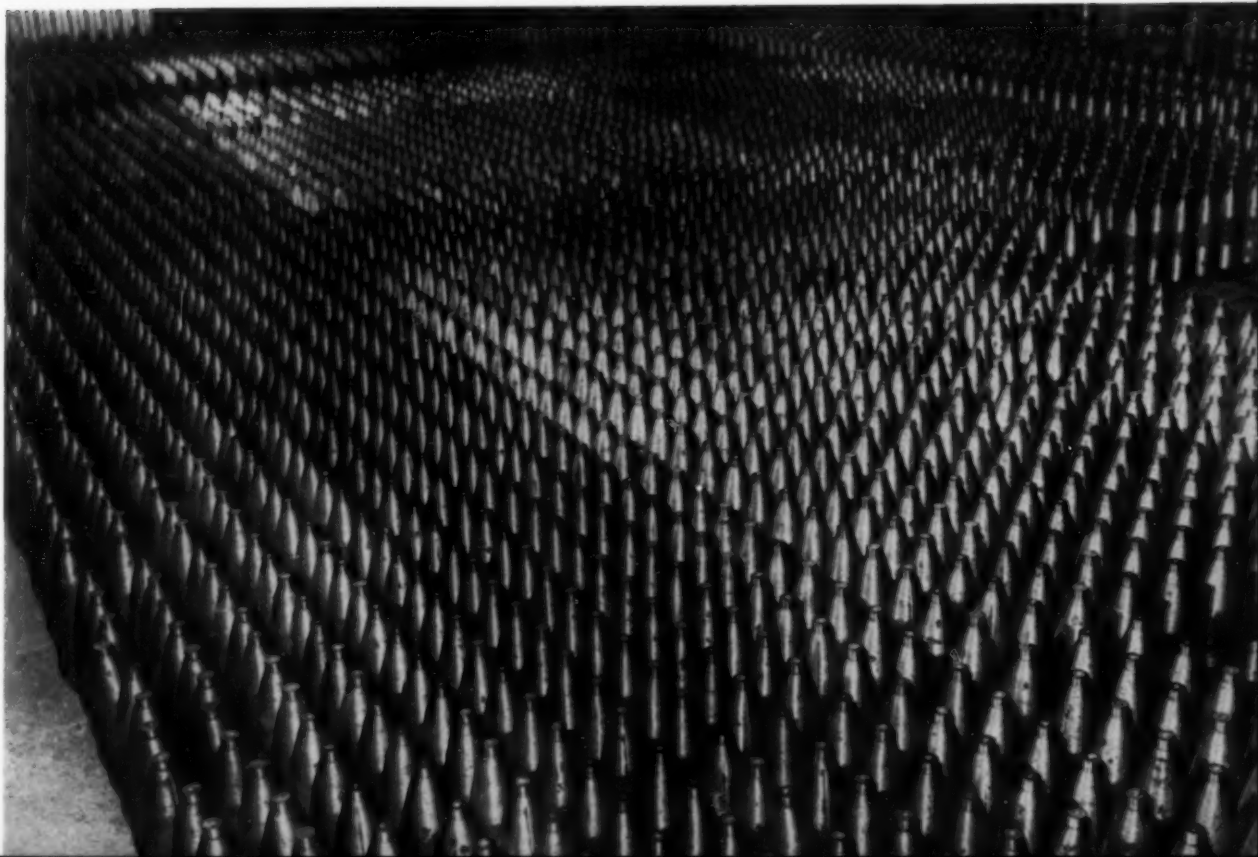
Assembling a batch of South African-made mortars.

South African factories are manufacturing steel helmets for the Union's fighting men. Helmets being pressed out of armour plate steel.





The manufacture of shells — scenes in a South African munitions factory.





It is inadvisable to give figures, but it can be said that South Africans themselves would be amazed if they knew the extent of their country's industrial war effort. When peace returns, the Union will be strong in her new industries for, as the Director-General of War Supplies has said, "South Africa can, with her own brains and material, embark on a new era of industrial development which will benefit all sections of the community and raise the standard of living of the poorer section. But for our war effort this revolution would not have materialized."

The Union's financial war effort has been commensurate with its efforts on the home front. During the year March 31st, 1940, to March 31st, 1941, defence expenditure amounted to more than £60,000,000 (\$265,000,000) — a very considerable sum when the fact is considered that South Africa has a European population of just over 2,000,000. This sum, which has been met jointly from loan funds and from revenue, will be exceeded in the current financial year, and defence expenditure for 1941-42 has been officially estimated at £72,000,000 (\$320,000,000) — \$160 per head of white population. These huge sums have naturally resulted in increased taxation (in his latest budget Mr. J. H. Hofmeyr, the Union's brilliant Minister of Finance, announced tax increases of about sixteen per cent on the previous year), but the citizens of the Union have borne the burdens placed upon them. It is considered in many quarters, in fact, that the Union's people would be willing to bear a much increased burden. Meanwhile the general economic condition of the country is flourishing. Money is plentiful in the banks and building societies, and unemployment is very limited. The war has opened up new northern markets, hitherto unexplored. Territories to the north of the Union, which hitherto obtained their imports from Europe, are to-day turning toward the Union for their supplies.

(1) Brigadier C. H. Blaine, Secretary for Defence, and Major-General George Brink, Divisional Commander of the South African Forces

(2) A group of the men who have helped in freeing Abyssinia from the Italian oppressors. On the left is Ben Foord, the famous South African heavy-weight boxer.

(3) For them the war is over. Prisoners taken by the South Africans climbing thankfully into motor lorries.

(4) The advance of the South Africans against the Italians. Churned up roads through which transports had to travel after a slight fall of rain proved to be another adversary faced by the South Africans in their movement into Kenya.

The Minister of Finance has warned the people of South Africa that these ultra-prosperous conditions may be transitory, and that each should save as much as he is able in order to weather the storm which "always follows a war". That the people have taken his advice is shown by the great success attendant upon the issue of Government loan certificates and by the large sums which are to-day invested in the Post Office Savings Department.

Our enemies have spoken of trouble and dissension in South Africa, of discontent and growing racial hatred. A section of the Afrikaans-speaking population, as we have seen, did not and does not now favour South Africa's participation in the war. But despite this peculiar difficulty, which has naturally been much exaggerated by the German and Italian propagandists, both the English — and the Afrikaans-speaking sections of the Union's population are making a great and notable contribution to the Commonwealth's war effort. The fact that more than half of the Union's Army is composed of Afrikaans-speaking men gives the lie to the German propaganda stories. General Smuts has in his volunteer army fighting for freedom to-day generals, colonels, majors and captains who fought

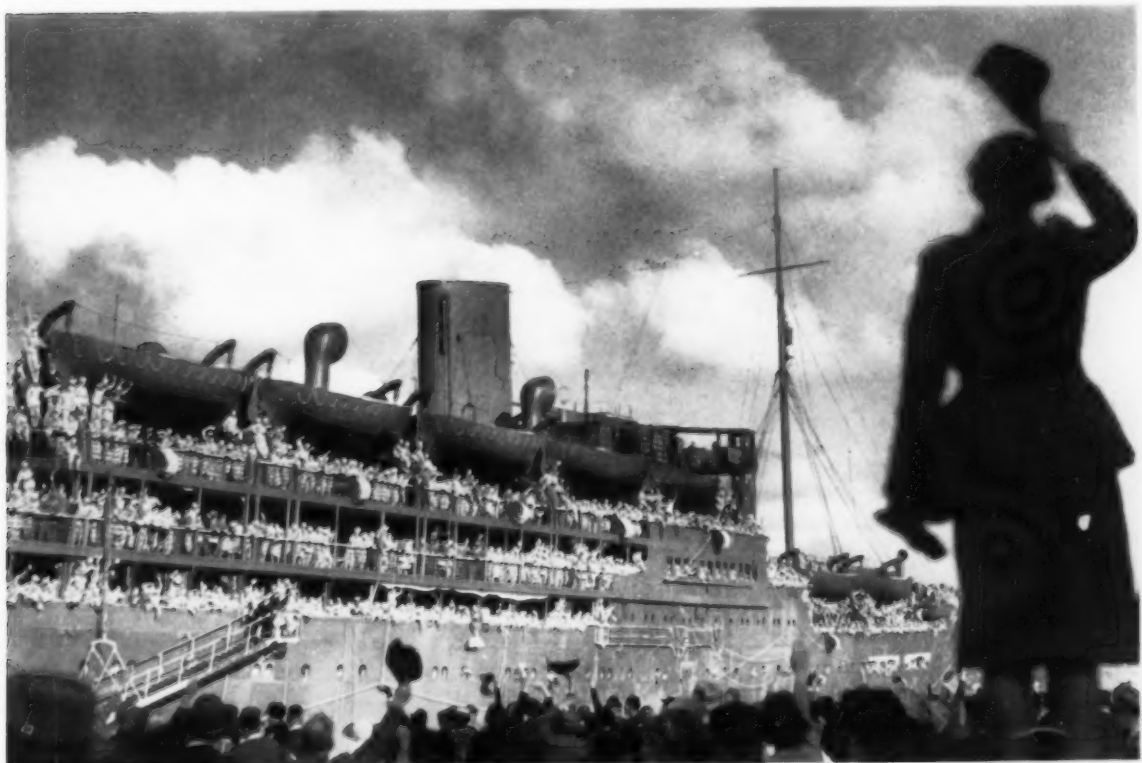
with him against Great Britain in South Africa forty years ago.

The spirit of South Africa's Springbok Army is typified in General Smuts' words addressed to the first contingent of men who left their motherland for Kenya.

"You are going north", General Smuts said, "to meet the enemy where he can be found, not where he comes to find you — in your homes. That has been the tradition of South Africa. We did it in the last war. You go to it now as the strategic rampart in the defence lines of South Africa. But in years to come your service there will forge links between North and South which will inevitably open up wider horizons and establish wider interests for South Africans.

"In taking our part in this war we are not merely defending ourselves, our country and our future. We are also safeguarding that larger tradition of human freedom, of freedom of conscience, freedom of thought and freedom of religion which is threatened, as never before in history, by the Nazi menace. The world cause of freedom is also our cause, and we shall wage this war for human freedom until God's victory crowns the end. Farewell, my friends, and may God bless and prosper the right."

South African troops leaving a Union port on active service.





REMARKS ON THE PHYSIOGRAPHY, ESKIMO, AND MAMMALS OF SOUTHAMPTON ISLAND

by T. H. MANNING

INTRODUCTION

I first visited Southampton Island in 1933, and was landed at Coral Harbour by the R.M.S. Nascopie on her annual trip to supply the Hudson's Bay Company's eastern arctic trading posts. I remained on the island till April 1935 when I crossed Roes Welcome which was frozen that year, and went by dog team via Chesterfield to Churchill. The greater part of the mapping was done during this first visit (Manning 1936), but as I have recently returned from a second expedition (British Canadian-Arctic Expedition) which worked in that area, a short account of its origin may not be out of place.

On arriving in England in June 1935, I began organizing an expedition to complete the work on Southampton Island, and afterwards visit Repulse Bay and west Baffin Island.

Contributions were made to this expedition by:
The Royal Geographical Society.....£300 and instruments.

L. Clarke, Esq. (Cambridge University Ethnological Museum).....£150
Gino Watkins Fund.....£50
Col. Meinertzhagen.....£10

The British Museum agreed to contribute on receipt of specimens, and, in Canada, the Topographical Survey lent instruments, the customs authorities very generously permitted the importation of equipment duty free, and the Northwest Territories administration issued all the necessary permits, as well as giving Dr. Keeling a passage on the R.M.S. Nascopie.

A considerable number of firms assisted by giving their products free or at reduced cost. Space permits the mention of only four of them here. They were: Messrs. Haig & Haig, Cadbury Ltd., Nestle's Ltd., and John Sinclair Ltd. (Barney's).

Lieut. Bennett was given leave from the Royal Engineers with full pay to accompany the expedition.

To all the above, as well as to the many others who gave assistance and advice, in England, here and in the North, and especially to members of the Hudson's Bay Company, we are all very grateful. I speak both for myself, and for the other members of the expedition who were:

R. J. O. Bray, Ornithologist and Surveyor
P. Baird, Geologist and Surveyor
G. W. Rowley, Archeologist
R. Keeling, Doctor, replaced by P. M. Bennett at Southampton in August.

In spite of the above-mentioned generous contributions, the individual members of the expedition had to be responsible for a considerable amount of the cost.

This, unfortunately, prevented the expedition agent in England from finding people suitable to replace those who had to return after the first one and one-half years. As is not unusual with such expeditions, the lack of money was also a considerable handicap to scientific work, compelling us to do much that could have been equally well done by native assistants. Originally, it had been hoped to obtain sufficient money to make an aerial map of south Baffin Island and two R.A.F. officers had secured conditional leave for this purpose, but as neither the hoped for grant nor the planes could be secured, this plan had to be abandoned.

In order to have a full summer's work on Southampton Island in 1936, we left Churchill in a crowded thirty-foot whale boat early in June. Following the west coast of Hudson Bay, it is about 500 miles to the south end of Southampton Island. Owing to the early start we had some trouble with ice, chiefly on the east side of Marble Island and in Daly Bay, but considerably less than we were led to expect.

We had hoped that if Roes Welcome was still frozen, we should be able to coast along the south edge of the ice bridge in open water, but as the previous winter had been mild and stormy, it had not frozen and there was, therefore, a large amount of pack-ice in the strait, so that we were very fortunate in crossing it in one day. The whole trip from Churchill took about two weeks.

We left Cape Munn, the north-west point of Southampton Island for Repulse Bay by motor boat on October 1st of the same year. Next year (1937), Baird, Bennett, and myself recrossed Frozen Strait to White Island near the middle of July, after having been held up by ice in the strait for nearly a month. Baird and Bennett left for Churchill in September, while I remained for another winter, crossing to Baffin Island in 1938. During my three winters on Southampton Island, I had opportunity to travel all around the coast, most of it by both boat and sledge, as well as to make about twelve crossings in different directions, so that it is simpler to describe the island as a whole rather than the individual trips.

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*The remarks on page 28 are not intended in any way as censure of the Hudson's Bay Company. The removal of Eskimo from a place of scarcity to one of plenty is, subject to certain safeguards, an excellent plan, and the introduction of rifles and modern hunting equipment, begun by the whalers, was both inevitable and, on the whole, very desirable. Mr. S. G. Ford who was post manager from 1924-1937 with the exception of one year, did all that was possible to prevent useless slaughter and waste. Neither should the natives be so greatly blamed, as I have heard of almost equally wasteful destruction by irresponsible whites under similar conditions, and were it not for the law, many species of both birds and mammals would be rapidly exterminated, in more civilized districts.

Top left:—Mouth of Canyon River looking out on Foxe Channel, mid-August, 1937

Bottom left:—Canyon River—probably east branch, mid-August, 1937

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History of Exploration and Development

SOUTHAMPTON Island is about 20,000 square miles in area, and forms the north-west boundary of Hudson Bay. It was probably seen first by Captain Thomas Button in 1613. It was, however, not known to be an island till the voyage of Middleton (1743) in 1742, nor was it known to be separate from Coats Island till still later. The first map known to me which shows Coats as a separate island is the general map in Hall (1879), but there is no mention of it in the text. According to Ferguson (1938, p. 257), however, the channel separating the two islands was discovered by Captain E. B. Fisher in 1865. It is, therefore, not strange that the name Southampton for the island, or first perhaps, for the general region, should have been derived by gradual usage from Cape Southampton, named by Button (Barrow 1818, p. 200) in honour of the third Earl of Southampton. The Island was next seen by Robert Bylot and William Baffin (Barrow 1818, p. 209) in 1615. Southampton Island may or may not have been seen by Luke Foxe when he named a small island Sir Thomas Rowe's Welcome (Barrow 1818, p. 239) from which Roes Welcome on the west side of Southampton Island takes its name. In 1821 Parry (1824), sailed up the north-west coast of Southampton Island and through Frozen Strait, thus proving the correctness of Middleton's statements. In 1824, Lyon (1825) sailed up Roes Welcome several times sighting Southampton Island and landing on Coats Island which was thought by him to be part of Southampton Island. In 1836-37 Back (1838), in H.M.S. *Terror* spent a winter drifting among the ice near the Foxe channel coast.

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But though often visited, little was known of the island and nothing of its inhabitants, until the visits of the whaler Comer (1910 and 1913) between 1896 and 1909. Munn (1919) who occupied a small trading post at Seal Point from 1916-1918, crossed the island in 1918 and was the first white man to do so. Soundings were taken in the sea surrounding Southampton Island by the Canadian Government Expedition under Low (1906) in 1904, but the coast-line was rarely approached sufficiently near to make accurate mapping possible.

In 1922 Mathiassen (1927 and 1931) spent some time excavating at Kok on Duke of York Bay, and during the winter crossed the island to South Bay, returning by Canyon River. From 1929-1930 Sutton (1932) spent a year on the island collecting birds and other animals. In 1924 a Hudson's Bay trading post was established by Mr. Sam Ford. A little later a Roman Catholic mission was established, but this has now been abandoned. There is a native Anglican lay reader.

Physiography

In its topography and geology, Southampton Island is divided into two very distinct areas on a line running south-east from Duke of York Bay, the north-east portion being Archaean gneiss, while, except for a few hills in the centre of the island, the south and east section is composed entirely of Ordovician limestone. The striking feature of the latter part of the country is the terraced limestone plateaux, varying in area from one square mile to 300 or 400, and separated by low marsh-lands mingled with raised beaches of limestone gravel and rubble. The pla-

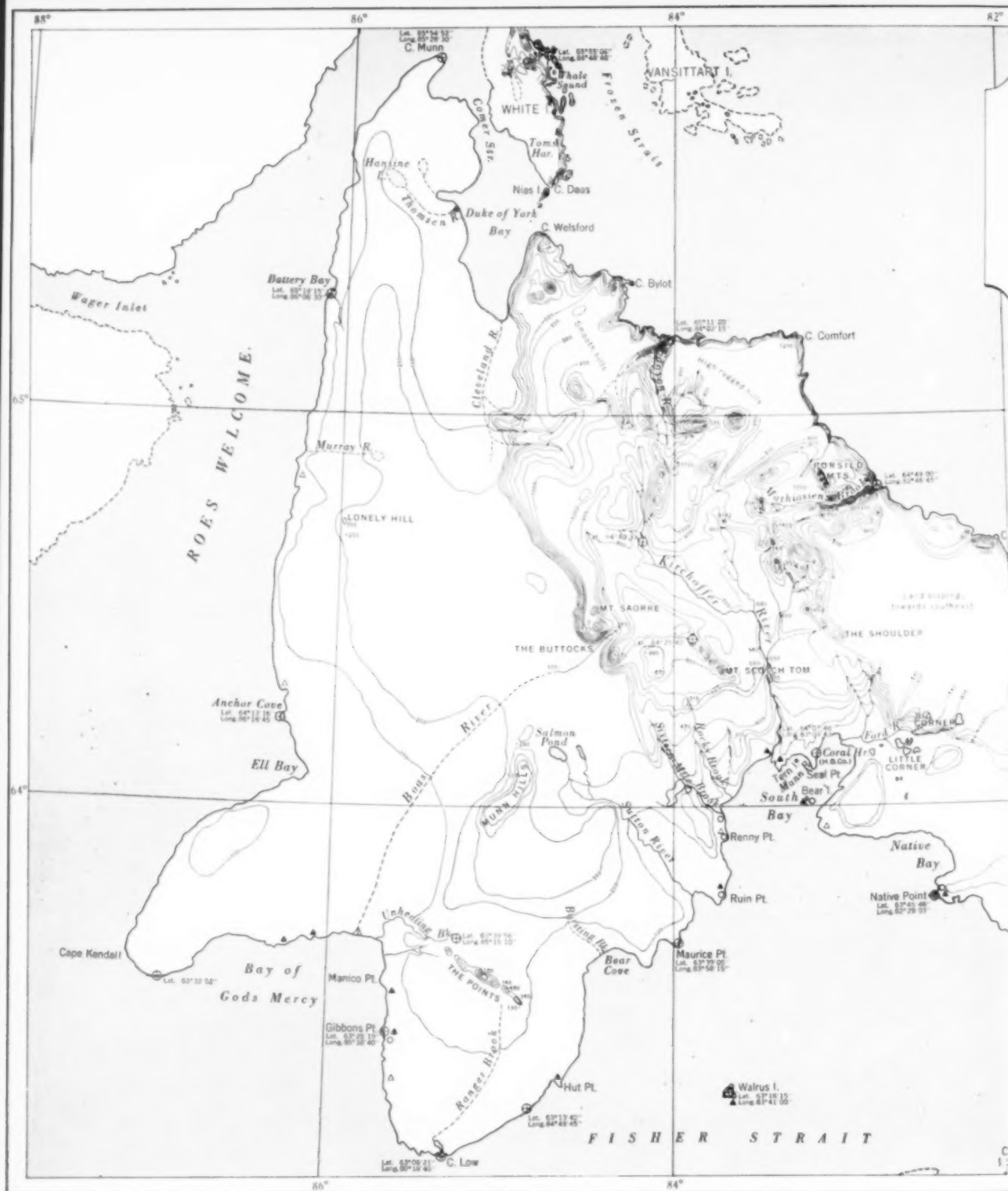


Members of the expedition at Gibbons Point (left to right): P. D. Baird, R. J. O. Bray, T. H. Manning, R. Keeling, (G. W. Rowley taking photograph), early July, 1936

teaux are almost bare of vegetation, and are composed of angular fragments of shattered limestone. In places these are small and gravelly, but more often they are flags up to a foot in diameter, and usually raised on edge. As the limestone is traversed by cherty beds, some areas are covered with fragments from which the calcareous matter has been dissolved, leaving many strange shapes. Small erratics of igneous rock are fairly numerous, but large boulders are rare. The bareness of the plateaux makes them exceptionally good ground for observing earth polygons and the sorting of rocks by frost. Though the detritus, which appears to have an average depth of from three to six feet, is undoubtedly everywhere underlain by rock *in situ*, exposures are uncommon, owing to the susceptibility of the well stratified limestone to frost action. The largest single exposure of solid limestone is a raised sea cliff now standing some hundred yards from the shore near Cape Fisher on the Foxe Channel coast, but a very hurried examination indicated that fossils were few. Other exposures are small both in length and height. They are usually at places where a river has cut a channel. Perhaps the best developed is at Anderson River. This

exposure appears intermittently for about one and one-half miles inland, and its greatest vertical extent is twenty feet. On the Roes Welcome coast there are some small cliffs a few hundred yards long and fifteen to twenty feet high. The plateaux are seldom separated all around by abrupt scarps. One, two, or more sides may be steep while the others will trail off gradually, both in height and changing vegetation, toward the marsh-land.

On some maps of Southampton Island, there are features marked as "peculiar shed-like hills". These are of the same formation as the plateaux, only smaller and with steeper sides. The most conspicuous is Lonely Hill. The two smaller ones near Sixteen-Mile Brook are also good examples, obviously homologous with the larger plateaux. Between the head of the Bay of Gods Mercy and Ranger Brook, five of these hills are marked. From the coast they certainly appear as five "shed-like hills", as only the highest tops are seen, and these are often raised or distorted by mirage. Actually, they are a definite range of hills with but two gaps. The Eskimo name *Nuvudlik*, meaning 'many points' conveys a better impression of them than "shed-like hills". They



New Names. In order to conform to the ruling of the Geographic Board, no Eskimo names are used on this map. Some of those used on my 1936 map have been replaced here by English names, wherever possible by a free translation of the Eskimo. Others have been omitted as the features to which they refer are not sufficiently prominent to need names at the present time.

New Name	Derivation	Eskimo Name
Big Corner	From its shape	Itiujuaq
Bursting Brook	From the Eskimo (literally, flood ice) and characteristics	Shiqmiq
Caribou Island	From the Eskimo	Tuktutoq
Gibbons Point	A camp of an Eskimo of that name here	Nuqsharnagaq

Junction Bay	Junction of the limestone and crystalline rock here	Kigushuk
Little Corner	From its shape	Itiuarshuk
Lonely Hill	From the Eskimo. Lit., Only Hill	Kingatuak
Maurice Point	After E. Maurice, H.B.C. post manager at Coral Harbour 1937-39	Sikaivik or Qikirtauyaq
Mt. Scotch Tom	Angutimarik's English name	Mt. Angutimarik
Munn Hills	After T. Munn, the first white man to cross the island.	Sadligutak
Renny Point	After R. Renny, H.B.C. clerk at Coral Harbour 1932-35	Munnimunek
Ruin Point	From Eskimo ruins there	Nuvariaq

Notes on the Map

All the detail in the present map except that along the Foxe Channel coast was taken from my map in the *Geographical Journal* Vol. 88, 1936. The Foxe Channel coast was taken from Bennett's map in the *Geographical Journal*, Vol. 95, 1940. This was prepared from boat traverses with log and compass. Except for the coast from Gibbons Point to Ranger Brook, my 1936 map was prepared from compass traverses conducted in the winter.

Owing to radio trouble, my 1936 map was very inadequately controlled in longitude. On the present map, besides those positions on the Foxe Channel coast, a further nine positions obtained by us in 1936 and 1938 have been used. Though a little loss of detail may have occurred in places, there was no particular difficulty in readjusting the coast line, but as the original traverse sheets were not available, some trouble was experienced in the adjustment of the interior, especially as two longitudes taken toward the centre of the island could not be obtained from England in time for use on the map. The position used for Coral Harbour is that obtained by C. H. Ney of the Geodetic Service of Canada.

The largest readjustment that had to be made was at Seahorse Point, which, from traverse evidence, had been previously put considerably too far west. . . . An error at Cape Low, where the summer and winter traverses had overlapped without it being realized, has also been corrected.

Among some astronomical positions forwarded to the Hydrographic and Map Service Branch of the Dept. of Mines and Resources by Bennett, was one for a point on the east coast about six miles south-east of Cape Welsford. These readings show a position several miles to the east of the position he has used in the map. As it has not been possible to communicate with him concerning this, it has been assumed that it was either a typographical error, or that he had good reason for neglecting the position. A note on this, and on the two inland positions, will be published when possible.

Heights were obtained by aneroid and controlled by observations of a mercury barometer taken by the Roman Catholic missionaries for the Meteorological Service of Canada. The contours have been put in with the aid of these spot heights, but as far too few readings were taken, a great deal has been done from estimates and rough sketches made in the field. The contours can therefore not be relied upon as more than form lines showing the major features, and an error of 200 feet may be found in some places, particularly in the northern part of the island. Considerable generalization has also, of course, been necessary, and owing to the comparatively small scale of the map, it has not been possible to represent adequately the steepest portions of the east coast, particularly the cliffs around Cape Comfort.

The north-west hill of The Points has been inadvertently omitted on the present map. It was on the top of that hill that the astronomical position shown on the map was obtained. The remainder of the chain should be swung slightly on its south-east end to form an approximate straight line.

My thanks are due to the Hydrographic and Map Service branch of the Department of Mines and Resources, and particularly to Mr. H. Parry, for the trouble that has been taken in the preparation of the map at a busy and difficult time.



Sutton River	After G. M. Sutton, ornithologist. Wintered on Southampton Is. 1929-30.	Kikuak
The Buttocks	From the Eskimo and shape	Atagugaluk
The Points	From the Eskimo	Nuvudlik
The Shoulder	From the Eskimo and shape	Koujak
Unhealing Brook	From the Eskimo and characteristics	Numikuittuk

Features not named previously:

Anchor Cove	Where we lost our anchor in 1936.
Battery Bay	A beacon composed of radio batteries here.
Ell Bay	After John Ell, a prominent Eskimo who many times crossed Roes Welcome from here.

Expectation Point	I waited here for a month expecting a boat.
Mathiasen Brook	After T. Mathiasen, a member of the Fifth Thule Expedition who wintered on the island.
Whale Sound	A large number of white whales seen here in 1937.

The positions of the following astronomical fixes are marked by rock beacons:

Cape Munn	Seahorse Point	C. Kendall
Battery Bay	Caribou Island	Anchor Cove
The Points	Canyon River	Walrus Island

Gibbons Point and Native Point are marked by the Eskimo house ruins, Ranger Brook and Mathiasen Brook fixes are at the mouths of these brooks.



Sadlermiut men: to the left Angutimarik

John Murray For. From *Archaeology of the Central Eskimos*
By Therkel Mathiasen

follow the usual tendency of the limestone hills to have flat tops and steep sides, but the ridges of some are very narrow, and the smaller are more rounded. The plateaux are probably formed by marine erosion of the horizontally bedded limestone, and the same is presumably true of 'The Points', as I have called them, though I think that, there, subsequent water erosion has played a larger part, and some peculiar depressions at the north end are probably due to underground caverns being formed by water and the roofs subsequently subsiding; or the subsidence may have been gradual as the rock was dissolved away. Sutton (1932, p. 25) who saw the Nuvudliks from the coast considered them to be glacial deposits. This I think is incorrect, and, though I have not myself seen the rock *in situ* on the higher parts, the Eskimo say it is there. Also, the flat tops and the steep sides can only be due to stratification. I do not think that there are glacial deposits of any size in this limestone country; if there were, they would probably consist partly of igneous rock and thus be easily distinguishable.

The marsh-land, which is very flat, is often intersected by raised limestone beaches. The largest and most consistent

tracts of marsh are north of the Bay of Gods Mercy, between Coral Harbour and East Bay, and south-east of Duke of York Bay. To map this sort of country in detail from the ground is quite impracticable owing to the large number of lakes. The southern portion of Bell Peninsula and the east shore of South Bay is also marsh-land and limestone.

The Precambrian granite and gneiss rise abruptly above the limestone country, sometimes directly, though not perpendicularly to the height of a thousand feet. It seems probable that this division is due to a fault running the length of the island, and on both sides of the gneiss block which has been pushed up. On top the hills are smooth and rolling, and once the numerous rocks are covered, there is no difficulty in sledging over them. Glacial deposits are numerous. For about fifteen miles inland from the Foxe Channel coast, the aspect of the country is entirely different. There the hills are higher and intersected by deep valleys, the major ones containing streams which often run through perpendicular-sided gorges with numerous falls. The hills terminate at the coast in high cliffs or very steep slopes. Sledging among these hills is impracticable except to go through them to the coast by the major valleys; though even this necessitates much lowering of equipment down frozen waterfalls, and as the ice breaks off up to the cliffs, on reaching the coast it is necessary to return the same laborious way. The Mount Minto area of Bell Peninsula is of similar structure, but, being smaller, has not been intersected by canyons. About ten miles north-west of the post is an isolated limestone area overlying the gneiss; the junction is confused by glacial drift. In all other cases, except perhaps at Cape Fisher, the limestone and gneiss are divided by a band of marshland, usually with a stream running close to the Precambrian escarpment.

The water around the limestone coast is very shallow and there are no harbours suitable for a boat drawing more than three or four feet. Those providing anchorage for small boats are mostly at the mouths of rivers, and of these only a few can be used at low tide. There are shallow mud flats at the heads of all the large bays in the limestone country, including Coral Harbour and Duke of York Bay. The flattest country is near Boas River where the tide goes out three or four miles, leaving mud in which one sinks to the knee. Elsewhere there are beaches usually composed of angular lime-

stone fragments, and at low tide a stretch of flat limestone rock *in situ* is often exposed. The water along the shore of Roes Welcome south of Battery Bay is probably a little deeper than elsewhere, and the land in immediate proximity to the coast is correspondingly higher. The harbour for small boats at the Hudson's Bay post is good, but there are submerged rocks in the outer harbour necessitating care with a large ship.

As is to be expected, the shore of the north-east highland is totally different. In many places high cliffs fall sheer to the sea, and it is only in a few places that there is any beach. Where a beach is present it is usually composed of large rounded granite pebbles. In places there is a little sand which is never met with in the limestone area. Duke of York Bay, which is described by Parry (1824, p. 46) as one of the finest harbours in the world, is deep except on the west side. Comer Strait is rather blocked by shoals, but a small schooner might possibly pass through at high tide. A schooner would find good shelter behind the small islands off the north-east coast of White Island; but from Duke of York Bay to East Bay, the coast is very forbidding, with little or no shelter from the north and east except for small boats in Canyon and Mathiasen Rivers. East Bay is shallow. I have not seen Seahorse Point in summer, but there is probably quite good anchorage there.

The largest river both in length and volume is Boas River. Rising in the highland behind the Buttocks, it follows an extremely winding course through a maze of lakes from which it is at times barely distinguishable. At its mouth it is about a mile across and from six inches to two feet deep in mid-summer, but during the spring floods it is much bigger in both dimensions. Kirchoffer is the next largest river, and with its two tributaries drains most of the highlands except a narrow strip near Foxe Channel. Owing to the difference in the nature of the country, it has no resemblance to Boas River. Its higher reaches run through deep rounded valleys, and then for the last twenty-five miles through a shallow gorge with rather sloping sides. Throughout its length there are numerous rapids, and toward the mouth two waterfalls about thirty-five feet high. Ranger Brook is considerably smaller. It rises in 'The Points' and probably follows a rather devious course. Cleveland River, which flows into Duke of York Bay, I have seen only in winter. It is probably about the size of Ranger Brook.

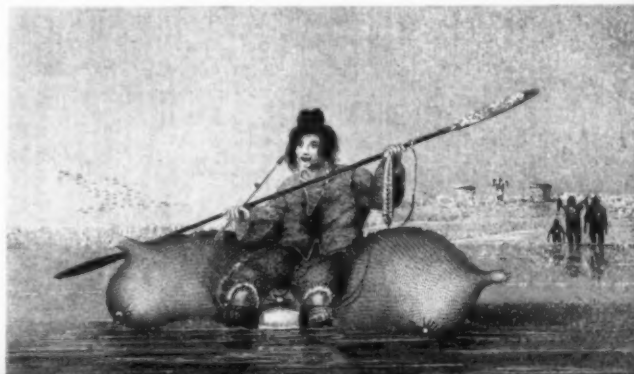
To the Eskimo, Sutton River and Sixteen-Mile Brook are the most important streams. Sixteen-Mile Brook flows from a large lake about eight miles inland, and many Greenland char are caught there in the fall when they collect around the mouth in August, preparatory to their return up the river for the winter. Sutton River is considerably larger. It rises in a small lake about twenty-five miles inland. This lake is fed by an underground stream which keeps the lake slightly warmer than others during the winter. In fact, in places the ice is seldom more than a foot thick, and the brook usually bursts in March or April, when fish are sometimes thrown out on the ice. Though they have not been so plentiful there in recent years, probably owing to the number that have been caught in the lake, it is still the best fish lake on the island, presumably owing to its warmth. In some lakes there is also another fish rather larger than the above, having a bright red belly and usually whiter flesh than the salt water char. These are probably land-locked fish of the same species. A specimen of another kind of fish taken from a lake near the centre of the island was identified by Professor Dymond as a lake trout (*Christivomer namaycush*). The Eskimo know of only one lake where this fish is found, but there may be others. I know of no other fish occurring in the lakes or rivers, and around the coast sculpins are the only others at all common.

One mile east of the mouth of Boas River is a small stream flowing from the north-west end of 'The Points'. In early November there was only an inch of ice on it, and near its source there was running water. The curious depressions in this area have been mentioned above and the stream runs underground for about 200 yards from

Nee-a-kood-loo, a native of Southampton Island

From *An Unsuccessful Attempt to Reach Repulse Bay*

By Captain G. F. Lyon, R.N.





Eskimo grave with roofing stones removed — Gibbons Point, July, 1936

a small lake. This lake would not bear my weight on November 5, when the ice on other lakes was about a foot thick. The Eskimo say that the stream breaks out even in mid-winter. This is implied by its Eskimo name Numikuittuk, meaning "never-healing". There are two other brooks whose name implies the same, and, as they are in limestone districts, both probably owe this characteristic to their subterranean sources. The continual overflow causes great thicknesses of ice to form and remain long after other ice has thawed. In February, with a temperature of minus 55 degrees Fahrenheit, Canyon River was cracking and water running on it, but this was probably due to snowdrifts weighting down the ice, and is not an uncommon phenomenon where there are suitable conditions.

Raised beaches to the height of 400 feet are numerous, and particularly well developed in the limestone country. Above, about 100 feet, the material is very angular, but this may be due only to the extra time which it has had to undergo frost action. Pleistocene fossils occur up to the height of 450 feet near Big Corner. They possibly occur higher but less commonly, as the barren rocky hill-tops would be

quickly denuded of a soft post-glacial deposit. A pleistocene deposit about twenty-five feet thick has been cut through by Canyon River near its mouth. This is probably the one mentioned by Mathiasen (1931, p. 19). There is another small deposit at the mouth of Anderson River. They contain numerous fossils, and collections from both places are now in the British Museum. On the rather low-lying land near the post and elsewhere, there are peculiar circular patches, about three feet in diameter, of white calcareous mud, similar to that exposed at low tide. They contain pleistocene shells. The surface of these is convex, and the mud appears as though it had been boiled or pushed up. They are similar to a flattened mole hill, and twenty or more will often occur in an acre. Presumably the numerous depressions were filled with mud in pleistocene times. Over this area the usual vegetation has grown, but as this mud holds considerable water, it is very susceptible to frost which pushes the mud up over the vegetation.

As in other parts of Arctic Canada, ruined Eskimo houses give evidence that the land has risen in recent times. There are two groups of houses near the mouth of Kirchoffer River and at least one in

the Bay of Gods Mercy, which I am sure would not have been built had the sea not been fifteen or twenty feet higher than at the present time.

Also at the Bay of Gods Mercy at Gibbons Point is a Sadlermiut village last occupied in 1902; from this a pathway has been cut through the raised beaches to the sea, but it does not intersect the last two beaches. Although it is possible that these beaches may have been formed by exceptionally high tides with a strong south-west wind, it is also possible that the sea has retreated since the use of the path. The numerous falls and rapids in Kirchoffer River and other streams are, of course, another indication of recent geological uplift.

Eskimo Inhabitants of Southampton Island

At the present time the island is inhabited by about one hundred and twenty Eskimo of which a third are Okumiut from Baffin Island and the remainder are Aivilingmiut whose permanent residence on Southampton Island probably began about 1910. The Okumiut, coming chiefly from Lake Harbour and Cape Dorset were first taken to Coats Island by the Hudson's Bay Company and when this post was closed, to Southampton Island, where a new post was opened. From time to time some have returned to Baffin Island and have been replaced by others from there. There are certain differences in language between the Okumiut and the Aivilingmiut, but they have not the least trouble in understanding each other. Until the last few years, however, there had been little or no intermarriage between the two peoples.

Ruins show that at some time or other the whole coast has been inhabited except that bounding Foxe Channel between Duke of York Bay and East Bay where seals appear scarce and the lack of bay ice in winter makes hunting difficult; but even there I have seen tent rings at Canyon River and near Cape Bylot between which places there is usually firm ice in winter. Now, except for an occasional camp at Gibbons Point, and one inland at Salmon Pond in winter, all Eskimo camps both summer and winter, are situated in South Bay, between Ruin Point and Native Point. During the fall some Eskimo go to East Bay and Seahorse Point for bear-hunting, and later for trapping. Duke of York Bay which was at one time a

regular camping ground, is still an excellent hunting district, but is now considered too far from the trading post, and is therefore rarely visited.

The Aivilingmiut are, for the most part, more provident, better hunters, more intelligent, and distinctly cleaner than the Okumiut living on Southampton Island (cf. Sutton 1932, p. 43), but this is in part due to these Okumiut being the dregs of their tribe chosen to go to Southampton Island by the Baffin Island traders as being the men they least wanted to keep. Comparing the Aivilingmiut with the Okumiut of Foxe Peninsula (south-west Baffin Island) there is probably little difference except that the former are inclined to be more independent of the white man than the latter, and take less kindly to doing menial work and odd jobs than the Baffinlanders. The Okumiut women often do heavy work such as unloading cargo and erecting tents. They are much more willing to assist both their own men in such work, and the travelling white man by drying and mending his clothes. Quite a number of the Aivilingmiut on Southampton Island are half-breeds, mostly a result of the whaling days. There is no doubt that this mixture of white blood has improved the stock. It does not appear in any way to have lowered their resistance to the climate while it has increased their enterprise. An Eskimo, not entirely without reason, considers himself superior to the white man in many ways, yet in all his contacts with the white man, the latter is the master, with the result that a half-breed considers himself superior to both white and Eskimo, which is, I think, a rather unique position for a half-breed. Repulse Bay, Roes Welcome, and the south coast of Southampton Island were, during the last half of the last century and the first few years of this, favourite whaling grounds, with the result that the Aivilingmiut came in contact with the whalers to a considerable extent. Nearly all the older men have served with them, and, in consequence, have learned a little English which peculiarly enough has not been passed on to the younger generation. I have no doubt that the Eskimo have in many ways derived considerable benefit, both mentally and materially from contact with the whalers in this region, some of whom they still remember and about whom they will inquire.

Till 1902, Southampton Island was inhabited by a race of Eskimo differing in many respects from those now scattered throughout the Canadian Arctic. They were called Sadlermiut, meaning the people of Sadleq, the Eskimo name for Southampton Island. According to Boas (1888, p. 451) a whaling captain met some Sadlermiut living in tents at Manico Point in 1865. Between that time and 1896 when Captain Comer first met them it is possible that they were occasionally met by other whalers who traded with them for baleen. An interesting account of two such meetings in 1878 and 1879, though no trade appears to have been done, is given by Ferguson (1938, pp. 43-6 and 156-8). Boas (1907, p. 470) quotes Comer as having heard that some crossed to the mainland about 1830, the information being presumably obtained from themselves. From the number of ruins it would appear that at one time Southampton Island had a comparatively large population, but, in 1898, Comer (Boas, 1907, p. 471) gives the number of Sadlermiut as only fifty-eight, and even then they were probably decreasing. They seem to have finally died out from an infectious disease, probably contracted from a Scottish whaling station located near Cape Low.

Their implements as well as their dwellings resemble those of the extinct Thule culture far more closely than they do those of the present-day Eskimo. During the summer they lived in tents of seal skin as do the present inhabitants of the island (the latter now more often use duck or cotton), but in winter they used houses similar in shape and size to the modern Eskimo snowhouse, though built of rock and covered with turf and gravel. Around the coast of Southampton the Greenland whale had at one time been plentiful, and the Sadlermiut were great whale hunters. Thus they had an ample supply of whale bone for supporting the roof and strengthening the walls. At the present time the roofs of all the houses have collapsed, this being largely due to the removal by the Aiviliks of all the better preserved whale jaws and ribs for komatik shoeing.

As already mentioned, Coats Island, when visited by Lyon (1825, pp. 48-72) in 1824, was considered to be a part of Southampton Island. When he landed there he was met by a very primitive type of Eskimo apparently possessing neither

kayak nor the larger umiak. At least Lyon did not see either at their camp, and though they understood the word umiak, they did not appear to understand the word kayak. Of course this may have been due to the use of a different word, though at the present time I believe this word to be almost universal among the Eskimo. One man visiting the ship paddled out supported by two inflated seal skins joined together by intestines. Boas (1888, p. 451), not realizing that it was Coats Island and not Southampton Island on which Lyon landed, considered him to be the first white man to make contact with the Southampton Eskimo whereas he was the first, and as far as I know, the only European to see the inhabitants of Coats Island who probably died previous to the Sadlermiuts. Bell (1884, p. 38) who landed on the island in 1884 says: "On the part of the island on which we landed we saw no Eskimo, but at Cape Southampton there were three fresh houses of the Eskimo covered completely with sods and moss . . ."

Some of Lyon's ethnological collection is at the Pitt-Rivers Museum at Oxford. Lyon's description is interesting in view of the fact that there is another culture called the Cape Dorset described by Jenness (1925) from specimens from a place of that name in south-west Baffin Island and since found in several other places. In this culture nothing has been found to indicate that sea mammals were hunted to anything like the extent that they were by the Sadlermiut, or even that either kayak or umiak was used (Rowley 1940, p. 496). Some specimens of this culture, supposedly from Coats Island, are now in the Canadian National Museum. Though the specimens and sites of this culture so far found are considered to be older than most of the Thule material, some of which is perhaps a thousand years old, the lack of boats mentioned by Lyon may indicate that some of the culture was in use on Coats Island within the last hundred years in the same manner as a remnant of the Thule survived on Southampton Island down to the beginning of the present century. Against this theory, however, is the fact that whale bone is said to have been plentiful around the old houses on that island, and Mathiasen, who noted that Lyon landed on Coats Island, considered from his description that the natives very closely resembled the Sadlermiut.

Previous to the extinction of the Sadlermiut, the Aivilingmiut had visited Southampton Island, and probably had lived there for a year or so at a time. They appeared, however, to keep chiefly to the north of the island, and the Sadlermiut to the south, so that they had little contact with each other except when the former occasionally landed on the south coast accompanied by the whalers. Comer (1910, p. 86) states that the island was uninhabited from 1903 to 1908 when he left a party of Repulse Bay natives there.

There are Aivilingmiut still living who can remember the Sadlermiut. Chief of these is Angutimarik, named by the whalers 'Scotch Tom'. It was with him that Mathiassen resided on Southampton Island in 1922, and largely from him that he obtained his account of the Sadlermiut (Mathiassen 1927, pp. 268-287). Mathiassen describes Angutimarik as an intelligent and reliable Eskimo between the age of fifty and sixty which would make him now between seventy and eighty. When I last saw him in 1938 he was still an active man, and one to be consulted by most of the Aivilingmiut before any decision was taken.

From Angutimarik and others I received an account of the Sadlermiut similar to that given to Mathiassen. It was said that the Sadlermiut were very dirty (cf. Boas 1907, p. 474). For instance when they killed a Greenland whale they would carry large chunks of blubber up to their tents by cutting a hole in the centre and putting their heads through. Usually, when travelling, they would just lie down behind a snow wall, most of them being unable to build a snowhouse. They did not understand how to soften caribou skin for clothing, but dressed largely in bear skins, at least for pants with the vellum inside. As this was extremely hard and rough, they greased themselves to prevent chafing. Lastly, they did not understand how to trim their lamps to prevent them from smoking. Some of these things may have been exaggerated by the Aivilingmiut, as all Eskimo are fond of ridiculing the customs of other tribes with whom they do not often come in contact, and Fergusen (1938, p. 157) seems to have received a very different impression as he called them a fine, healthy, clean people. Their remarks, however, about lamp trimming at least are probably founded on fact, as in some of

the houses there is a deposit of soot nearly half an inch thick. Two or three of the Sadlermiut were adopted as babies by the Aivilingmiut, and are still living near Chesterfield.

The Aivilingmiut state that the Sadlermiut never placed implements in or beside the graves of the deceased, and though I have seen some twenty or more, a few of which may not have been known, and therefore not robbed by the present natives, I have seen implements at only two graves on Southampton Island, both at Expectation Point. These, the Eskimo who was with me thought, were not Sadlermiut graves.

The Sadlermiut, at least during later years like the Aivilingmiut, their neighbours to the west, had no umiaks.

In 1934 I did a little excavating at Kirchoffer River and Gibbons Point. In 1936, most of this work was done by Rowley, both at the above two places and at Walrus Island. In 1938 I spent about two weeks digging at Expectation Point near the extreme eastern end of the island. The first and last places mentioned were inhabited shortly before the



A typical Eskimo in summer clothing, Arctic Bay, 1937



Sheer cliffs, several hundred feet in height, at Cape Comfort

extinction of the Sadlermiut. At these places, blades for harpoon heads and knives made of iron were common, though not to the exclusion of flint which was still used almost entirely for arrow heads. In some of the houses we even found brass cartridge cases, probably traded after use.

According to the present inhabitants of the island, the disease which finally exterminated the Sadlermiut first developed at Gibbons Point, though the last people probably died at Native Point. This latter place has been inhabited continuously for at least the last ten years, yet there are still several human skulls around the tents.

The most interesting encampment which we visited was on Walrus Island. This island is about one square mile in area, and about thirty miles distant from the mainland of Southampton Island which can just be discerned from it. Unlike the flat limestone and marshland of the neighbouring shore, Walrus Island rises abruptly to about 100 feet, and is composed of igneous rock. Though it is possible that in calm weather thin ice may form between it and Southampton Island, this ice soon breaks up again, so that though the Aivilingmiut have several times tried to

cross to it in the winter they have never been successful. It is, therefore, a strange place to find winter dwellings that have obviously been inhabited over a considerable period. It is probably a hundred years since the houses have been abandoned. The Aivilingmiut account for their presence by a legend which tells that at one time several families were driven off the mainland by the remainder of the inhabitants and that these families settled on Walrus Island.

We were unable to find any graves on the island; neither did the houses contain anything to indicate that the inhabitants had died there. Among many which resembled the Sadlermiut implements, we found a few of the Cape Dorset culture which might indicate a connection with Coats Island. One striking difference between these houses and those on Southampton Island was the complete absence of whale bone. Walrus tusks and skulls were very numerous, showing that these animals were as plentiful there at that time as they are at the present day. Possibly as walrus were so plentiful, they had no necessity to hunt whales.

Mammals Viewed in their Relation to the Eskimo

Caribou—When the Hudson's Bay Company first established a post at Coral Harbour in 1924, Southampton Island was one of the best districts for game of all kinds necessary for the subsistence of the Eskimo. But a few years after the Hudson's Bay post* had been established, the caribou had been so reduced as to be of no practical importance in the life economy of the natives. As is usual in such cases the herds suddenly disappeared with but little warning. The Aivilingmiut blame the Okumiut, who first came to the island at that time, for their wasteful killing, and certainly the destruction of the caribou coincided with the beginning of their residence on the island. It must be noted, however, that it also coincided with the introduction of an unlimited supply of cartridges to the Aivilingmiut who had previously had to go to Repulse Bay or Chesterfield to replenish their stock. Even if there were no change in the method of hunting, the sudden increase in population might have had serious results. Some

Eskimo attempt to account for the reduction of the caribou by saying that they crossed to the mainland in 1926, but they have absolutely no evidence to support their assertion, and I consider it very improbable. What remained of the caribou were mostly on White Island and the Foxe Channel coast where the rugged country made a natural sanctuary. In 1935 I estimated that there were not many more than thirty remaining on the island. This estimate may have been too low, as in 1938 there seemed to be quite an increase, and a few small herds spread out from the hills. Most of these were promptly shot.

The loss of caribou meat, though it is by far the most favoured meat especially among the Aivilingmiut, is not very serious on Southampton particularly since the introduction of flour, as ample quantities of other meat can be obtained. The lack of skins, on the other hand, causes considerable hardship, and may have an adverse effect on the health of the Eskimo. When skins can be obtained from other districts the Hudson's Bay Company keeps a stock for trade, but it is rarely possible to acquire sufficient skins suitable for clothing, and of course, they are expensive.

Wolves — With the reduction of the caribou, the wolves which had once been numerous also became scarce. In the two winters of 1933-35 I travelled all over the island without seeing a single wolf track except along the Eskimo trap lines where the remaining four or five were doing considerable damage by eating the trapped foxes. In October, 1937, a wolf, supposedly the last, was shot, and as no others were seen during the rest of the winter—they were presumed to be extinct on the island. The Eskimo suggest that the wolves on Southampton Island were smaller than those on the mainland, and also that they may have been the descendants of the Sadlermiut dogs which were presumably left to subsist as best they could when their masters died. It is true that an Eskimo dog can sometimes manage to survive without human assistance for several months even in winter, and it is not impossible that a few might have lived till they became adept at securing their own living, and though I know of no demonstrated case where wolves and dogs have mated it does not seem so unlikely. However, I feel sure that the male wolves having the opportunity would soon kill the dogs,

while the females would probably account for the bitches.

Fox — With the Southampton Islanders, as with all other Eskimo in the Eastern Arctic, the chief article of trade is the pelt of the arctic fox. For this reason the fox is now to the Eskimo the most important single species of animal. They are dependent on it not only for such luxuries as tea, tobacco, and flour, which, much as they would dislike to, they could very well do without, but for ammunition and rifles, without which, so far have they lost their primitive culture, most, if not all would starve within a year. Of the two colour phases of the arctic fox on Southampton Island, the white outnumber the blue a hundred to one. During recent years, an occasional coloured fox has been caught on Southampton, but their habit of eating the arctic foxes in the traps, and their greater cunning, make them as unwelcome visitors as wolves. I have no exact figures but I believe the *per capita* catch of foxes on the island over a period of years is as large as anywhere in the Eastern Arctic, and considerably larger than in some places, and this in spite of the fact that a third of the island is never hunted. It is of course well known that a period of maximum abundance of foxes occurs about every four years, and that this is connected with a lemming cycle of the same length. The fox cycle on Southampton Island seems less regular and less well marked than on the mainland, possibly due to the irregular movements of the pack-ice, which, some claim, supports a large fox population, and on which the foxes would be chiefly dependent in a migration to the island. There are two species of *lemming* on the island. Their only importance to the Eskimo is as a source of food to the foxes. Though undoubtedly the fox and lemming cycles are connected, the lemming are by no means the only source of food obtained by the foxes. During poor lemming years the foxes subsist chiefly by scavenging, which accounts for their being more numerous along the coast than inland, and for their being attracted to the neighbourhood of a camping area. Of course, with the melting of snow, their scavenging is greatly simplified, and in summer they are able to obtain an abundance of eggs and young birds. As no systematic marking of foxes has ever been done, virtually nothing is known with regard to the migratory

habits or the natural mortality of the most important animal in the Eastern Arctic.

Arctic Hare — The Arctic hare is common in the higher parts of Southampton Island, but is of no importance to the natives. Even when shot or caught in a trap it is seldom eaten by the Eskimo, though most white men consider that it makes an excellent stew. Unless injured, it is probably rarely, if ever, caught by foxes, but may be occasionally by weasels.

Weasels — These, like the lemming, may be apparently almost absent one year, and very numerous the next. They are ridiculously fearless, and will often enter an occupied snowhouse even in the daytime. While asleep I have been awakened by them running over me and touching my face. A few are caught in fox traps and traded, but the Southampton natives rarely if ever set special traps for them as the price obtained is not considered worth the trouble. Their habit of removing fox bait makes them very troublesome, and years of abundance are cursed rather than blessed.

Polar Bear — Polar bears may occur anywhere on Southampton Island and at any season, though the females spend at least from mid-November to mid-March in a state of semi-hibernation in snow caves, the young being born at that time. Probably most of the males also hibernate, though they may come out intermittently during the warmer spells. Some males may perhaps spend the winter well out on the moving ice. Throughout the summer there is usually some pack-ice near the Foxe Channel coast, and this is where the bears are most numerous, particularly from the middle of September to early November. In October 1937 I saw seven separate fresh tracks in a walk of a couple of miles at East Bay, and at about the same time some Eskimo reported having seen eight bears together there, and seven near Mt. Minto. For some years the Eskimo were not paid more than \$2.00 to \$4.00 for a polar-bear skin, with the result that few were traded, and no special hunts were made, there being sufficient accidentally met to provide the natives with plenty of skins.



Left:—Nushugea guarding a dead walrus

Bottom left:—A few miles east of Canyon River

Below:—The mouth of Mathiassen Brook





Walrus on Walrus Island

for their own use. In 1937 the price jumped to \$12.00, with the result that special hunts were conducted in the fall and many bears were killed. As the natives were well provided with walrus meat that year, the bear meat was left uncached as an attraction for foxes. The skins of the younger bears are used for making outside pants, which, as they are waterproof, may be used in summer as well as in winter. The larger, heavier skins are used as the bottom bedding skin, and, being waterproof and hard wearing they are far superior to caribou skin for this purpose. They also make excellent taps for the soles of winter boots. I do not think there has been, so far, much reduction in the number of bears visiting Southampton, though there is a considerable variation from year to year probably due to ice conditions. The price of bear skins having now, perhaps fortunately, fallen, it is not likely that an excessive number of bears will be killed. Boiled bear meat is good, and is much appreciated by the natives, but the liver is never eaten as it is considered poisonous. It is said to make the dogs lose their hair, and an attempt is made to put it out of their reach. The dogs, how-

ever, usually secure it in the end, and I have never known any ill effects to ensue. This, however, does not mean that it may not sometimes contain a poisonous substance.

Ringed Seal — The ringed seal is by far the commonest seal all around Southampton Island. There is no evidence to show whether its numbers have been reduced by the introduction of rifles among the natives. Owing, however, to the number that are shot and sink, as they usually do during the summer months, unless very quickly seized or harpooned, as well as those that are wounded and lost when hunted on the ice in the spring, it is obvious that there must be a larger drain on them than there was in the days when they were harpooned, and almost every one killed was secured. The great strength of the seal population lies in the large reserve areas which are never hunted, these being large even if only the coastal water is taken into account, for it is doubtful if there are many ringed seal at a considerable distance from land. It is very apparent that the size of the ringed seal in waters that are regularly hunted is much smaller than in places where there



are no natives, and they have an opportunity to grow to full maturity. From this it would appear that individual seals tend to keep within restricted areas. If this be so, it may be supposed that seals in areas where the Eskimo population is concentrated, become depleted after a certain period. Previous to the establishment of trading posts and missions, the Eskimo would probably move to fresh grounds, but now the majority prefer not to move farther than is absolutely necessary from these. This is, of course, contrary to the interests of the traders who do their best to persuade them to disperse. I think it questionable if South Bay is as well stocked with seals as formerly. Hairy seal skin is used for outer pants and winter boots, while the dehaired skin is used for waterproof summer boots.

Bearded Seal — My remarks with regard to the shooting of seals rather than harpooning applies with more force to the bearded seal, as these sink during a longer season than the ringed seals, and are hunted proportionately more during the summer. If in deep water, they should first be wounded with a large rifle shot in the body or a

.22 in the head and then harpooned. A great many Eskimo, however, prefer to kill them outright, and trust to luck that they will float, or that at least they can reach them before they sink. By this method I have known an Eskimo to sink eight in succession. Unlike the ringed seal, the bearded seal rarely if ever comes up on the bay ice in the spring, and their young are said to be born on the moving ice, and not in dens under the bay ice. The flesh of the bearded seal is not considered to be as palatable as that of the ringed or of the walrus, but it makes very good dog feed. East Bay appears to be one of the best places for bearded seal. The skin is used for line and boot bottoms.

Harp and Ranger Seals — Harp and ranger are the only other seals of the district. Neither are sufficiently numerous to be of any particular importance, though the skins of both, especially the ranger, are much prized for clothing. During the summer, some rangers are usually to be seen at the mouth of Ranger Brook.

Walrus — The Atlantic walrus may occur in small numbers on any coast during the summer and fall, but I cannot recall any being killed between November and February. By March they are quite often seen at the floe edge, though not very often secured till summer. In September 1937 I observed about 300 at East Bay and some remained there till the ice began to form. The Eskimo say that this is quite usual, but at the present time they never hunt in this bay owing to the distance by sea from it to the post. Most of the walrus, which are one of the chief items of dog food, are obtained near Native Point in late August and September when some Foxe Channel ice usually arrives. If they are unable to get walrus here the natives generally go to Walrus Island. Walrus are not always there in numbers, and I am not sure whether they visit it at regular seasons, but in August 1936 I saw about 2,000, and I was told by R. Renny that he saw about the same number in September, 1934. As with the seals, some sink and are lost, and to some extent this is inevitable. When possible a white man accompanies the natives to Walrus Island, and this is certainly advisable. In proportion

SOUTHAMPTON ISLAND

to the number of walrus visiting South Bay the number of Eskimo hunting them is much smaller than at many places in the Eastern Arctic. Walrus meat makes the best dog feed obtainable, and, though tough, it is considered equal or better than seal by the Eskimo. The ivory of the tusks is used for harpoon heads, fore-shafts, and toggles; a little is carved for trade, and the rest is traded unworked. I do not think walrus are ever killed for ivory alone, but it would not surprise me greatly if they were occasionally under some circumstances, as at one time they were certainly killed for the sake of the skins. Fortunately, the export of these is, I think, no longer permitted.

Greenland Whale — The Greenland whale was at one time numerous around Southampton Island, and regularly hunted by the Sadlermiut, but the activities of the whalers which began in that area about 1860 so reduced the number of whale that within ten years the industry was past its prime. It is said that the last whale

to be taken by the Sadlermiut was in 1895 (Boas, 1907, p. 474). At the present time the Aiviliks keep a sharp lookout for these large whales, and usually see one or two a year, but they are rarely secured. Considering that a few have survived so long since the cessation of commercial whaling, it is possible that the species may now be on the increase. They are so rarely killed by the natives that a complete close season would be no great hardship to them and might be instrumental in allowing them to increase beyond the critical stage.

White Whales — White whales are fairly numerous during spring and summer. Most are secured in nets. They are chiefly valued for the blubber and for the outside of the skin which is considered a delicacy. A few skins are salted for trade, but they do not bring much profit to the Eskimo for the work involved.

Narwhales — Narwhales are very rare, at least on the south side of the Island. Two were killed in South Bay in 1937.

Right:—Mathiassen Brook

Below:—Rolling Precambrian hills on the right and the beginning of Palaeozoic limestone on the left about eight miles south-east of Mathiassen Brook

Bottom right:—Near Cape Comfort



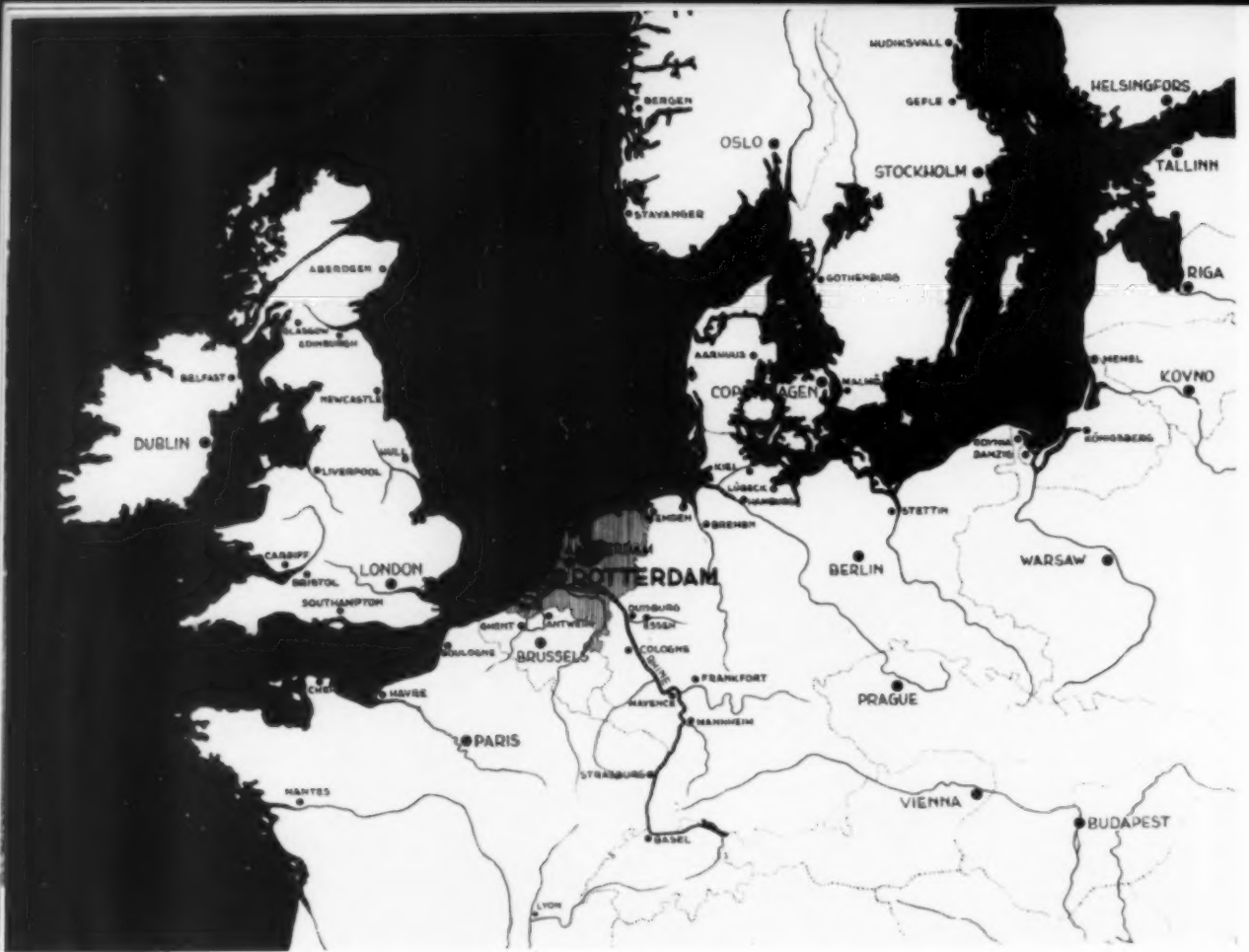


Fig. 1—Vicinal map of Rotterdam

Courtesy Rotterdam Port Authorities



THE ROLE OF ROTTERDAM

by ARTHUR LOWE BURT *

FOR many years before World War II, Rotterdam was a leading world port. The importance of Rotterdam was based primarily upon her geographic location at the mouth of the Rhine River, within easy access of the North Sea and the Atlantic. This geographic location enabled Rotterdam to become an excellent focal spot for the transfer of Rhine-barge, and ocean-vessel cargoes. Manufactured goods were shipped down the Rhine to Rotterdam, for export overseas; feed, food, and raw materials for industry, brought into the port by ocean-vessels, were carried up the Rhine in barges. This transshipment function of Rotterdam was of importance to the prosperity of the Netherlands. It was even more important to Germany, the natural hinterland of the Rhine, as that country prepared for World War II.

The eyes of the world are now focused upon Europe, — upon Germany. Various questions are asked. "How strong is Germany economically?" "How large are the German stores of commodities?" "Where, when and how did Germany get these commodities?" Most of these questions defy a complete answer. A partial answer, however, to some pertinent questions is found in the story of the role played by the port of Rotterdam.

Although Rotterdam is of little use to the Nazi power as an import harbour during this second World War, the port played a most significant role in the six-and-a-half-year period preceding the conflict. In 1933 Germany was weak. Repercussions from the world-wide depression of 1929 had rocked her tremendously. She had to rebuild her internal structure, and cultivate her external relations. The wheels of National Socialism began to move slowly, but surely, and with an ever-increasing vigour and determination. An increased trade was necessary to strengthen the backbone of the nation, and to produce a war-machine inferior to none. Rapid, efficient lanes of transportation were essential.

There are, however, several geographic limitations involved in the transport of commodities from overseas countries to

Germany. The overland route from the Mediterranean to Germany is long, slow, and hindered by the high relief of the Alps. Transport of enormous quantities of bulk goods by this route is economically and geographically unsound. The traverse of France, west to east, is long, costly, and likewise unsound economically and geographically.

The natural lanes of transport, therefore, for commodities from overseas, are seen to be those which begin at the North Sea and the Baltic, and easily penetrate to the interior of Germany. Northern Germany, Holland, and most of Belgium occupy parts of a great lowland area which stretches from Central France to Russia. South of this lowland area lie hilly and mountainous regions. From these central uplands many rivers flow to the North Sea and the Baltic Sea. These are the natural lanes of transport. Most important are the Scheldt, Meuse, Rhine, Ems, Weser, Elbe, Oder, and the Vistula, each of which opens a natural avenue of approach to the interior of the continent.

Important German manufacturing centres are located in the western part of the Reich, from Westphalia and the Rhineland southward to the junction of the Neckar River and the Rhine. A glance at the map, Fig. 1, reveals the fact that the Rhine and associated river system pierces the heart of this widespread manufacturing belt. Although canals and railroads link the Scheldt, Meuse, Ems, Weser, and other rivers to this industrial section, it is easily seen that the Rhine is the most natural artery for the flow of commodities. One more point remains. How suitable is the Rhine for the transportation of bulk goods, so necessary to heavy manufacturing? The physical characteristics of the Rhine are such that barges of 1,200 tons can reach Basel, barges of 2,500 tons and 3,000 tons can easily be towed to Strassburg and Mannheim respectively, and even larger barges are used to Duisburg-Ruhrort. The Rhine taps one of the busiest sections of Europe, and the excellence of the course for cheap barge transport causes a focalization of a tremendous quantity of goods at the mouth. There is Rotterdam.

* Where not otherwise credited, photos and charts by author

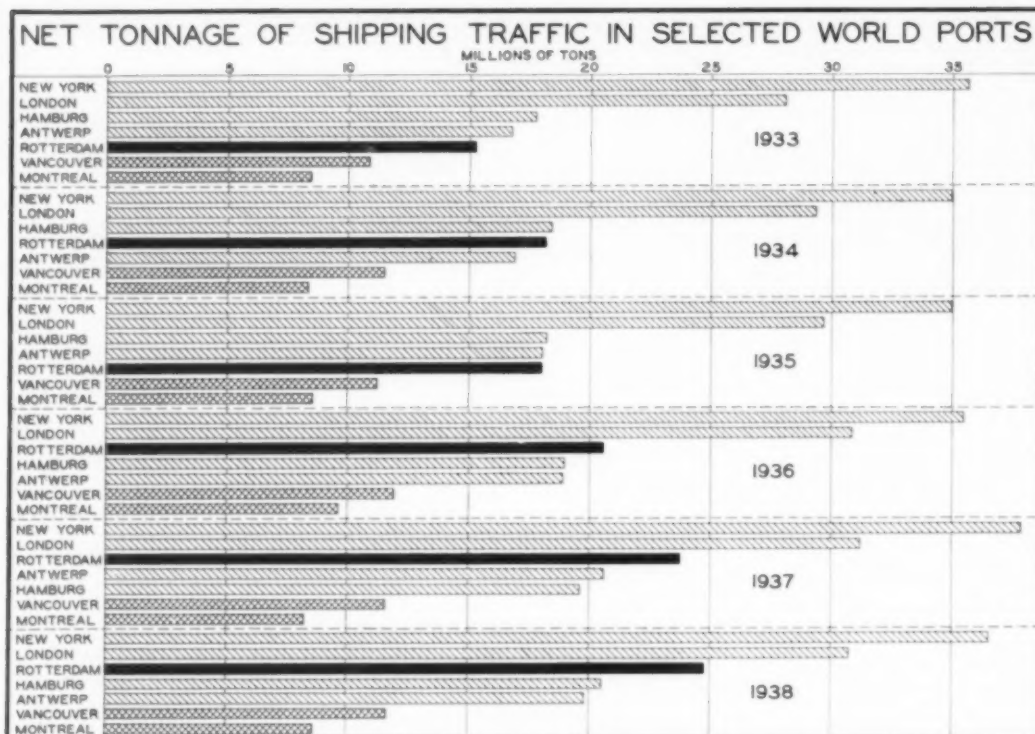


Fig. 2—Net tonnage of shipping traffic in selected world ports

Rotterdam, situated on the banks of the New Maas, is the natural gateway to the basin of the Rhine. In 1938, the imports and exports in goods traffic through Rotterdam amounted to more than forty-two million tons. In this same year, over 15,000 ships, having a net tonnage of approximately 25,000,000 tons, were entered at Rotterdam. Fig. 2 shows the rapid rise of Rotterdam, in shipping traffic, from 1933 to 1938, and also affords a comparison

with important world, continental, and Canadian ports.

This enormous traffic implies a great buying and selling power in a large hinterland, and an impulse which causes this activity to concentrate at Rotterdam. The impulse is found in the presence of the Rhine River; and the hinterland is the natural hinterland of the Rhine and its tributaries, and their associated regions, which are linked by rail to the riverine areas.



Fig. 3—The New Waterway

Courtesy Rotterdamsche Havenkroniek



Fig. 4—The German boat, *Wighert* passing along the Waterway, near Maasluis, on the way to the sea.



Fig. 5—Entrance of the New Waterway, at the Hook of Holland. In the background is a German vessel, en route to Rotterdam. In the foreground is a small passenger boat, the *Prinses Juliana*.

Rotterdam is the natural port of the Rhine, and it rose to high rank as a world port due to the handling, in a transshipment capacity, of the raw materials and commodities imports for the hinterland, and of the coal and industrial products from the hinterland.

* * *

A more thorough examination of the physical and economic conditions that favour the port of Rotterdam is most helpful at this point. When the basic facts concerning location, function, and facilities for operations are recognized, then the comprehension of Rotterdam's role in the years preceding World War II is greatly facilitated.

One of the outstanding reasons why Rotterdam is so suitable as a port of call is that of proximity to the commercially active North Sea. The New Waterway is the factor that enhances the value of the location of Rotterdam. This New Waterway is an eighteen-mile channel from Rotterdam to the Hook of Holland (see Fig. 3). It can handily accommodate the largest sea-going vessels, and has a depth of thirty-two and a half feet at low tide and thirty-seven and a half feet at high tide. Ocean-vessels navigate the New Waterway under their own power, and pass from the Hook of Holland to Rotterdam in about one and a half hours, passing neither lock nor bridge (see Fig. 4, 5, 6). In Rotterdam the towage charges are low, due to the

absence of locks and the ease of access to the various parts of the port proper. The combination of New Waterway and most modern dock and haven equipment insures each vessel of rapidity of transfer.

Although there are impressive bridges in the centre of the port, they are in no manner a hindrance to shipping. They form a sort of boundary, with the sea-going vessels remaining in the havens to the west of the bridges, and the Rhine barges gathering to the east. The barges pass beneath the bridges to the vessels and participate in the transfer functions in the several havens. The Willemsbrug, which connects the right bank of the river with North Island, is a fixed bridge, as is the



Fig. 6—Dike structure of the New Waterway at the Hook of Holland. *Prinses Juliana* in background.



Fig. 7—An air view of the bridges in the centre of the port. Railroad bridge in foreground, and road-traffic bridge in background.

Photo by K. L. M.—Royal Dutch Airlines

railroad bridge which parallels it. The bridges over the Koningshaven, however, to the left bank of the river, are movable (see Fig. 7).

The part of the river to the east of the bridges provides a place of free anchorage for the Rhine barges and inland craft which are waiting to enter the havens to meet sea-going vessels and unload or receive a cargo (see Fig. 8). Here is a centre of activity, where long strings of barge-tows are formed, or broken up.

From the mouth of the New Waterway to Rotterdam, the difference in the tides amounts to about five feet, and it is not a limiting factor in the transshipment of goods. In the port proper the tides are not so variant as to necessitate the presence of locks at the entrances of the havens. This open communication with the river is one of the great advantages of the havens, and of the port of Rotterdam. Of the important

ports of the Rhine delta, Rotterdam is the only one without locks.

* * *

Before 1870 the port of Rotterdam consisted of but few havens. After 1870 the construction of several havens took place to accommodate the increasing volume of traffic. Fig. 9 presents a picture of the port, and the havens, and their relation to the New Waterway. This map may prove helpful in the understanding of the various havens discussed in the following sections.

On the left bank of the port are the Binnenhaven, Spoorweghaven, Rijnhaven, Maashaven, Waalhaven, and the Petroleumhaven. In general, the bulk cargo traffic is concentrated on this bank of the river. On the right bank are the Parkhaven, Jobshaven, Schiehaven, IJselhaven, Lekhaven, Keilehaven, Merwehaven and Wilhelminahaven. For the most part, although not entirely, the right bank is devoted to traffic in general cargo.

Fig. 8—Rhine barges, loaded with German coal, waiting to enter the various havens and discharge their cargoes. These barges are in the free anchorage stations to the east of the bridges. Barge families go for a swim in the water.





Fig. 9—Havens of Rotterdam

It was in 1879 that the first modern basins for ocean-vessels were completed. The Binnenhaven and Spoorweghaven, with sheds and cranes on the quays, were constructed on the left bank of the Maas

(see Fig. 10). Their purpose was to handle the general goods traffic. The bridges across the river had just been completed, and soon the traffic began to develop in the direction of the left bank.

Fig. 10—The Binnenhaven and Spoorweghaven. Originally constructed for the handling of general goods traffic, these basins at present are used for temporary storage, and for the coasting trade. In the foreground is North Island and the Koningshaven. In the background to the east of the bridges, barges may be seen in the free anchorage area of the river.

Courtesy K.L.M.—Royal Dutch Airlines





11



12



13



14

For a few years great commercial activity was centred in these basins. At the beginning of the 1900's, however, they no longer were suitable to the demands of the traffic. The importation of both bulk and general cargoes increased, and Rotterdam responded by the construction of new basins.

The transshipment of bulk goods required not so much the berthing space, as in the narrow Binnen- and Spoorweghaven, but rather the open haven, with plenty of room for mooring posts. The advantages of the mooring posts lie in the possibilities of transfer of goods to small craft on both sides of the ocean-vessel. Thus, in 1894, the Rijnhaven was constructed as the first typical bulk goods basin. The Rijnhaven is situated on the left bank of the Maas, just to the west of the Spoorweghaven (see Fig. 11). The entrance of the Rijnhaven, in favourable contrast to those of the Binnen- and Spoorweghaven, is not closed by a bridge. The Rijnhaven comprises about seventy-four acres. It has a depth of twenty-eight feet at low water, a total quay-length of one and a half miles, and twelve mooring posts.

Fig. 11—The Rijnhaven. This was the first typical bulk goods basin. The narrow water areas of the Binnen- and Spoorweghaven were not well suited to the transfer of bulk goods. There must be open water, and plenty of room for mooring posts. In the left foreground is one of the Holland-America Line's vessels. Several warehouses line the sides of the haven. In the left background are the Binnen- and Spoorweghaven, and the New Maas.

Courtesy K.L.M.—Royal Dutch Airlines

Fig. 12—The Maashaven. The interior of the Maashaven, with floating grain elevators, barges, and ocean vessels. In the left background are some general cargo sheds, while on the right is a granary, timber yards, and establishments for the handling of grains and flour.

Courtesy K.L.M.—Royal Dutch Airlines

Fig. 13—In the Maashaven a typical scene includes an ocean vessel, floating grain elevators alongside, and smaller craft clustered around the elevators. The grain is drawn by suction into the elevator from the hold of the sea-going ship, weighed, and then discharged, through the pipe, into the small boats.

Fig. 14—In the foreground is a section of the Waalhaven. In the background is the new Maas. The old petroleum grounds occupied the peninsula formed by the Waalhaven and the New Maas. These were evacuated in 1935. The small land area held no possibility of expansion.

Courtesy K.L.M.—Royal Dutch Airlines

The Maashaven, another bulk cargo basin, is situated on the left of the river, to the west of the Rijnhaven (see Fig. 12, 13). The entrance of the Maashaven faces the entrance of the Parkhaven, on the right bank. The Maashaven is almost double the size of the Rijnhaven, having an extent of 145 acres. It was completed in 1905, and has seventeen berths at mooring posts.

Only two years after the Maashaven was completed, the work was begun on the Waalhaven. With an area of 741 acres, the Waalhaven is the largest artificial basin of any port in the world (see Fig. 9, 14). In 1931, the part for the use of ocean-vessels (four-fifths of the whole area), had been dredged to a depth of twenty-six to thirty-three feet at low water. A typical bulk cargo basin, the Waalhaven has eighty-two berths at mooring posts and buoys. At present the Waalhaven is somewhat different from the original construction. Several piers have been added and the number of quay berths has been increased (see Fig. 15, 16, 17, 18, 19, 20).

With the Maashaven in use, and work on the Waalhaven begun, attention was turned to the provision of dock-space and

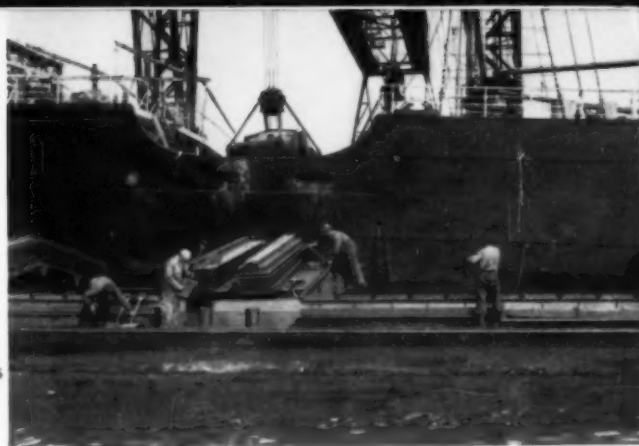


Fig. 15—Iron ore in the process of transshipment from ocean vessel to Rhine barge, in the Waalhaven. This product is the leading import to Rotterdam. Most of it goes through to the hinterland.

Fig. 16—Transshipment in the Waalhaven takes place from docks as well as from mooring posts and buoys. Notice the huge logs piled on the dock.



Fig. 17—In this picture an ocean-going vessel is being supplied with coal. The coal-bearing ship is known as a transporter; the coal is carried from the hold of this ship to its tower by means of a conveyor-belt, and then falls into the bunker space of the ocean-vessel by means of chutes. On the transporter is the name *Bunkermachine*.



Fig. 18—Here the transporter has completed the bunkering function, and is leaving the Waalhaven. In the background are ships, dock establishments, and the cranes which tower into the skyline of Rotterdam throughout the port.



Fig. 19—Loading bridges in the Waalhaven. Grabs of loading bridges and cranes are many and varied. In the case of bulk goods, the grabs take up the load without direct aid by workers.



Fig. 20—Floating grab-crane in the Waalhaven. The ocean vessel lies at the mooring-post, with the lighter between the vessel and the crane.

facilities for the increasing traffic in general goods. The concentration of haven construction until this time had been on the left bank, and mainly for bulk cargoes. More modern facilities were needed for the loading and discharge of general merchandise than the Binnen- and Spoorweghaven could offer. Thus, in 1909, one series of basins was completed on the right bank opposite the entrance of the Maashaven. The three basins added at this time were, the Parkhaven, St. Jobshaven and Schiehaven (see Fig. 21). Another series of general goods basins was planned to the west of the first group, opposite the Waalhaven. Despite the outbreak of World War I, the Lekhaven, the IJselhaven, and a few smaller basins parallel to them were finished in 1916. They were put to use after the War (see Fig. 22).

The Merwehaven, which lies to the west of the Lekhaven and the IJselhaven, was completed in 1931 (see Fig. 23). This basin, in reality, is a series of three basins, with a single entrance. Although work on the Merwehaven underwent difficulties due to the crisis of 1929, it is now equipped with the latest facilities for the handling of general cargo (see Fig. 24, 25, 26).

The final basin for consideration is that of the new Petroleumhaven, five miles down the river from the peninsula formed by the Maas and the Waalhaven, and opposite Vlaardingen (see Fig. 27). The imports of mineral oils in Rotterdam have risen from one million tons in 1929, to approximately three million tons in 1938. This tripling of mineral oil imports could never have been accommodated without the space and facilities of the new Petroleumhaven. The old petroleum grounds, on the peninsula between the Maas and the Waalhaven, had no available space for such tremendous expansion. The new Petroleumhaven fulfils several requirements and has several advantages. It is removed from the greater part of general port activity, and yet it is in a most easily accessible location. It lies but twelve and a half miles from the sea, and is in direct contact with the navigation route, thus facilitating the process of bunkering. The equipment is most modern; the best tanks, pumps and refineries are all available in this new Petroleumhaven. Railways and roads link the basin to the communication system of the port proper. In 1938, due to increased

Fig. 21—The entrance of the rectangular Parkhaven faces the Maashaven. The St. Jobshaven lies parallel to the Parkhaven, and the Schiehaven forms a peninsula with the New Maas.

Courtesy K.L.M.—Royal Dutch Airlines

Fig. 22—The Yselhaven, Lekhaven, and Keilehaven are general goods basins. In the foreground are the railroad tracks at Hudson Street, and the spurs which serve the docks. In the background is the entrance of the Waalhaven.

Courtesy K.L.M.—Royal Dutch Airlines





Fig. 23—The Merwehaven is a general goods basin. It consists of a series of three basins with a single entrance.
Courtesy K.L.M.—Royal Dutch Airlines

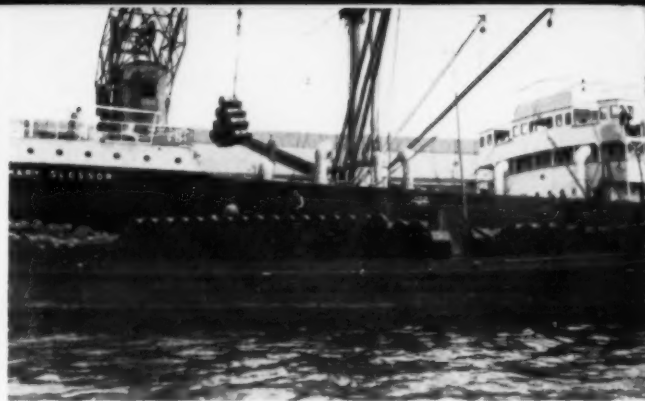


Fig. 24—A hoist of ten barrels of oil requires careful handling by competent workers. Here the transfer is being made from barge to ocean vessel in the Merwehaven.

activity, a second Petroleumhaven was constructed at Pernis.

* * *

Now that a survey of physical and economic factors contributing to the importance of Rotterdam has been completed, it is necessary to mention more of the hinterland divisions.

The hinterland of Rotterdam may be divided into three parts:

- 1—The Netherlands (National hinterland, reached by water and rail).
- 2—The large sections of Germany, and parts of Switzerland and western France that are served directly by the Rhine; and their associated areas, linked by railway and canal networks.
- 3—A small Belgian section, where the trade activities of the Rotterdam and Antwerp hinterlands overlap.

The local Dutch hinterland consumes approximately thirty per cent of the total imports to Rotterdam (1936-1938). Such products as coal, maize, wheat, timber, barley, petrol, crude mineral oils, cattle food and seeds are the leading imports to the Dutch hinterland. Rivers and canals

are the main agents of distribution in the Netherlands, railways occupying a secondary position as carriers. For the year 1938 the total combined imports and exports by rail, through Rotterdam, amounted to only 321,591 tons. The total combined imports and exports by rivers and canals, through Rotterdam, however, amounted to 32,662,430 tons.

The Dutch hinterland is shared chiefly between Amsterdam and Rotterdam. Vessels plying the North Sea are able to reach Amsterdam by way of the North Sea Canal. The canal connects IJmuiden, on the North Sea Coast, with Amsterdam. Amsterdam carries on a flourishing trade with the Netherlands East Indies, more so than does Rotterdam. The latter port, however, on the basis of net tonnage of shipping traffic, accounts for sixty-three and four-fifths per cent of the total direct arrivals from the sea in all Dutch ports.

Sixty-nine and four-fifths per cent of the total imports to Rotterdam are for transshipment to the non-Dutch hinterland. The Belgian hinterland is relatively unimportant, due to the dominance of Antwerp and other Belgian ports. The natural hinterland created by the Rhine

Fig. 25—Luffing cranes at work in the Merwehaven



Fig. 26—Transshipment of sawn timber from barge to ocean vessel takes place readily in the Merwehaven. Note the hoist of sawn timber being made, with another in readiness, and three more hoists being prepared on the barge. A transfer of this type must be made skilfully to avoid tilting and slipping of the load.





Fig. 27—A section of the new Petroleumhaven. The tanks are those of the Batavian Petroleum Company. Compare the area of this basin with that of the old petroleum grounds, as shown in Fig. 14.

Courtesy KLM—Royal Dutch Airlines

system, inclusive of large German areas, and some French and Swiss areas, is the great hinterland of Rotterdam. To this area flow large quantities of iron and manganese ores and other ores, wheat, coal, timber, rye, maize, barley, and several other commodities. The navigability of the Rhine and its tributaries serves to extend the boundaries of the hinterland.

* * *

With the picture of the physical structure of the harbour and the multiple nature of the hinterland well in mind, it is now fitting, before a detailed analysis of the years 1933-1938 is begun, to undertake a general review of the goods traffic trends from 1920 through 1938, roughly the Inter-War period (see Fig. 28).

This period may be divided into four units which aid the interpretation of the traffic and its trends:

- 1—1920-1926—Period of Post-War Struggle for Recovery
- 2—1927-1929—Period of Port Recovery
- 3—1930-1935—Period of Depression
- 4—1936-1938—Period of Port Progress

The first World War almost completely destroyed the purchasing power of Germany, and the collapse of the hinterland caused a depression in Rotterdam. The seven years, 1920-1926, however, demonstrate a rise towards a prosperity which even surpassed the high achieved in 1913. From 1920 to 1922 the value of the German mark continued to decline. Much of the traffic by sea, and especially that in ores, which would have gone to Rotterdam ordinarily, went to German North Sea ports, due to the exchange advantages of the mark. (Fig. 29 shows how the shipping traffic of Hamburg almost trebled in these first three years, while that of Rotterdam failed to double.) The slight decrease of goods traffic in 1923 was due basically to the French and Belgian occupation of the Ruhr, and to increased competition from Antwerp. The occupation met with passive resistance by the Germans and meant an almost complete cessation of Rhine traffic for the port of Rotterdam. In September, 1923, Germany abandoned the policy of passive resistance to the occupation. In 1924, an Inter-

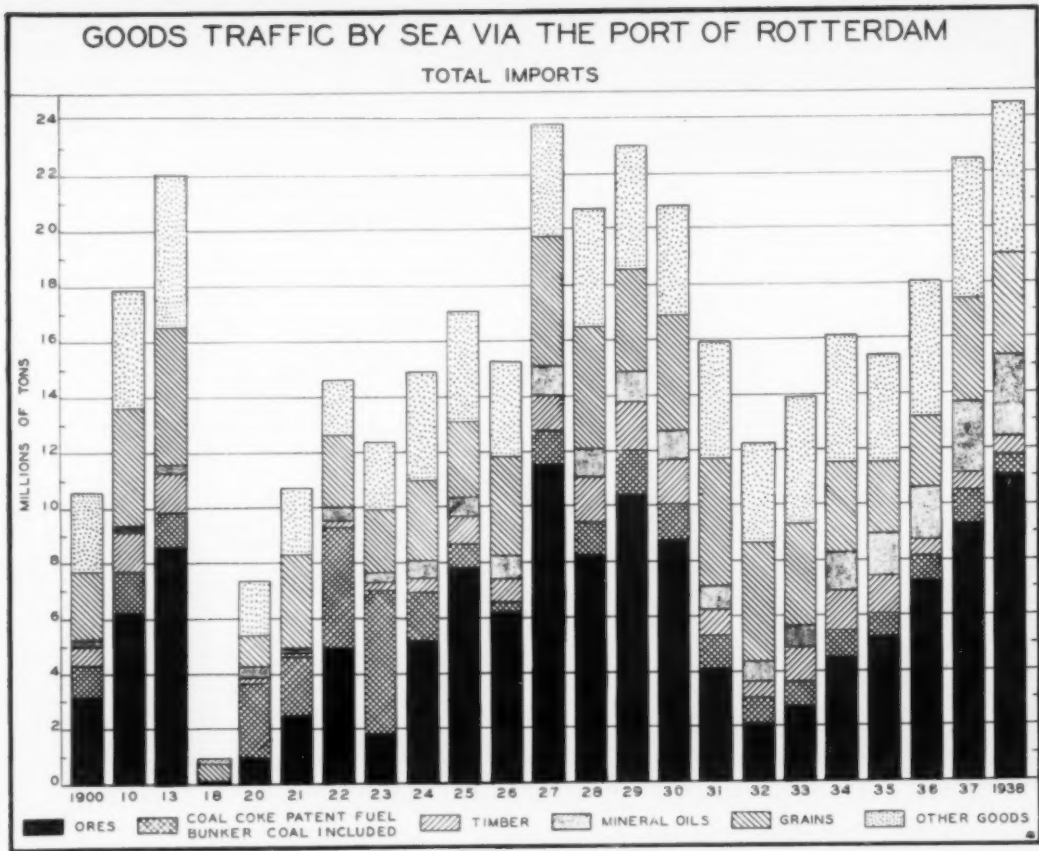
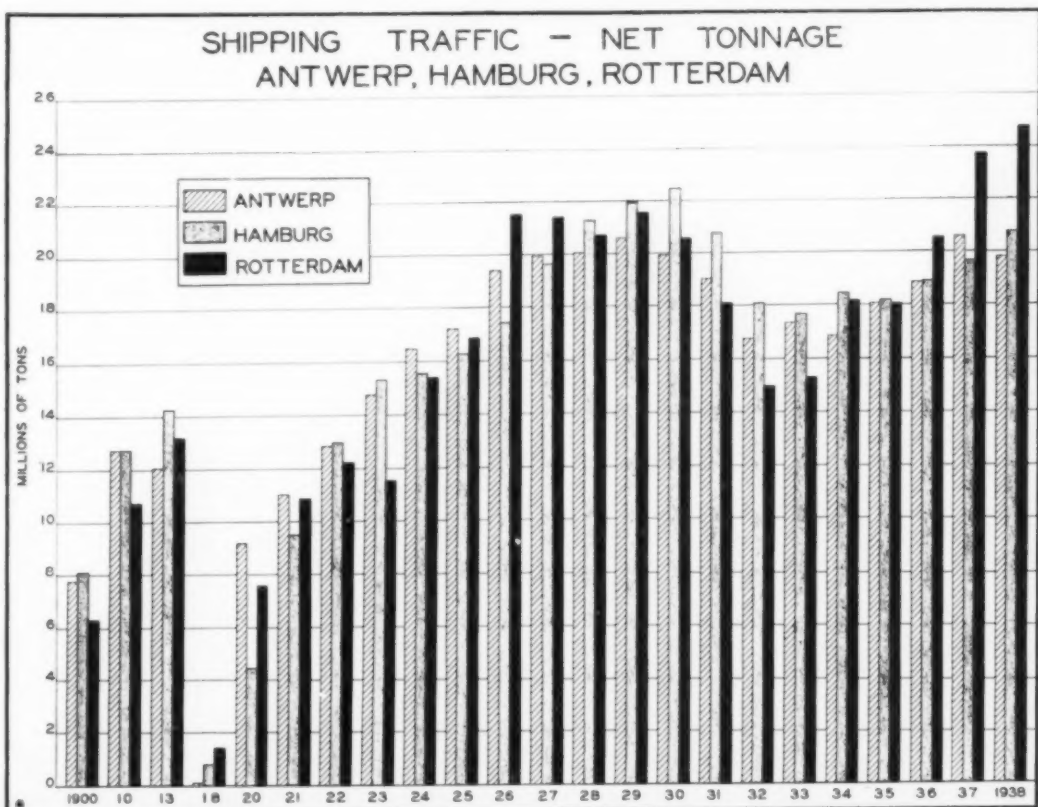


Fig. 28—Goods traffic by sea via the Port of Rotterdam. This graph pictures the "Total Imports" and is based upon statistics gathered in the Chamber of Commerce at Rotterdam (statistics are in tons of 1,000 kilos). The totals here given are exclusive of river and canal traffic and entrepôt.

Fig. 29—Net tonnage of shipping traffic in Antwerp, Hamburg and Rotterdam



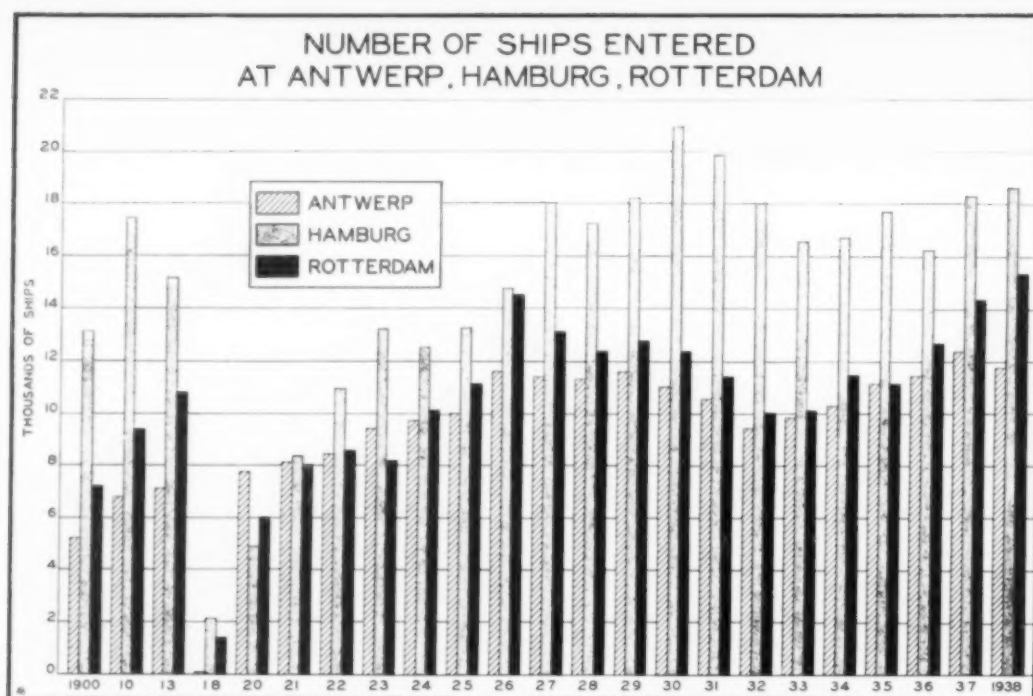


Fig. 30—Number of ships entered at Antwerp, Hamburg and Rotterdam. (The statistics upon which this graph is based were gathered in the Chamber of Commerce at Rotterdam. Statistics for Hamburg from 1929 through 1938 are for "Gross-Hamburg", which includes Hamburg, Harburg, Wilhelmsburg, and Altona. Statistics for Rotterdam from 1934 through 1938 include Pernis. These statements also apply to Fig. 29).

national Loan, a result of the London Protocol, aided German credit, and thus started the hinterland of Rotterdam on the road to economic recovery. Although the year 1926, on Fig. 28, shows a decrease, it really was a continuation of the upward swing. The drop was brought about by an unusual situation which involved the importation of less coal and ores. The coal decline was caused by strikes in British mines. A considerable amount of German coal was exported in this year, therefore, and a rise in freight rates occurred. With the rise in freight rates came a decreased importation of ores.

Fig. 29 and 30 show a similar development to that followed by the goods traffic. In 1923, both the number of ships, and the net tonnage of shipping traffic declined due to the occupation of the Ruhr and the consequent difficulties of Rhine navigation. The peak reached in Rotterdam in 1926 was caused by the tremendous activity in the export of German coal (see Fig. 29, 30).

The years 1927-1929 marked a culmination in the upward trend of goods traffic by sea, and signaled a period of port recovery. The decline of goods traffic in 1928 was due to decreased imports of ore. Strikes in the Swedish mines, and in Rhine navigation were basic causes for the

decreased importation. The cessation of the strikes resulted in a considerably increased import of ores in 1929, and a rise in the total imports by sea, which almost equalled the mark established in 1927. The crisis which took place in New York financial centres, however, was extending its influence to Europe at the end of 1929.

The net tonnage of shipping traffic and the number of ships entered in this three-year period, as shown by Fig. 29 and 30, correspond to the trend evidenced by the goods traffic. The year 1926, however, due to the British coal-strikes and the resultant increased activity in Rotterdam, presents a high on Fig. 29 and 30 which tends to overshadow the culmination significance of the years 1927 through 1929, as related to 1920-1925. It is important to recognize that 1926 was a peak, due not to a normal trend, but rather to an unusual circumstance, and that the years 1927-1929, in respect to number of ships entered and net tonnage of shipping traffic, complement the trend of the goods traffic.

From 1930 to 1932 traffic underwent a steady decline in the port of Rotterdam. There was a diminution of imports, number of ships entered, and net tonnage of shipping traffic. In 1932, however, the bottom was reached, but not before the

total imports in goods traffic had fallen below the level of 1923 (see Fig. 28). Both the net tonnage of shipping traffic, and the number of ships entered reached their lowest level since 1923 (see Fig. 29, 30). Antwerp and Hamburg were also hard hit in 1932, but Rotterdam suffered especially because of excessive pilotage moneys and port-dues. From 1933 to 1935 there were reductions of port-dues, tariffs for handling mixed cargoes, and sea-pilotage. These reductions aided the increase in goods traffic that was recorded in 1933 and 1934.

The period of 1936-1938 recorded a brilliant chapter in the history of Rotterdam — increased activity, greater imported tonnage, expansion of port facilities, and prosperity.

* * *

A survey of the Inter-War Period has been completed, and the attention may now be turned more specifically to the role of Rotterdam from 1933 through 1938, the years of Nazi rule in Germany.

Previous to World War I, the year 1913 was the peak year for Rotterdam (see Fig. 28). In this year the greatest tonnage of grains ever imported was recorded, and this figure has not yet been surpassed. Enormous amounts of iron ore and other ores were brought from overseas to Rotterdam, and coal, timber and other goods played an important part in swelling the trade of the port, and building up the power of the German hinterland. Following this peak year came World War I. The echoes of this situation ring very clearly in the minds of various peoples, the world over, at the present time. In 1938 a new all-time peak of imports had been reached. The German hinterland was becoming more stable and more powerful. On September 1, 1939, Nazi forces invaded Poland, and Danzig was annexed. Two days later Britain and France officially entered the conflict against the Nazis. — and World War II was begun. The huge stores of coal, ores, oil, grains, timber and other materials that had entered the Reich by way of Rotterdam and the other north-western European ports were being actively put to use. The ports themselves were subjected to an allied blockade of an ever-increasing intensity. The role of the port of Rotterdam, as an active focal spot for overseas goods destined for the Reich, was of but little significance at this time. Her work had been done.

In 1932 there was imported through Rotterdam approximately twelve million tons of goods. In 1938, the last full year before the beginning of World War II, over

twenty-four million tons of goods traffic entered the port. Certainly the doubling of imported tonnage in a period of six years occasions further analysis.

The total tonnage of goods traffic by sea, imported to Rotterdam during the six years, 1933-1938, amounts to 110,061,396 tons. This tonnage may be divided into two parts: that which is for use in the Dutch nation, and that which is transshipped to Germany. (A small per cent of the goods transshipped enters Switzerland or Eastern France, but it may be safely stated that the greater per cent of these goods enters Germany for consumption there.) The total transshipped tonnage for the six years amounts to sixty-seven per cent of the entire import traffic. During 1937 and 1938, the last two full years of intensive Nazi importing before the launching of World War II, when the imported tonnage in Rotterdam soared above twenty-two million tons each year, the transshipped goods amounted to slightly more than seventy per cent of the total for the two years. These percentages demonstrate most emphatically the vital importance of Rotterdam as a transshipment point for goods destined for the Reich. Further emphasis may be seen in the fact that, in 1937-1938, the 33,017,885 tons imported through Rotterdam and routed to Germany represented thirty and four-fifths per cent of the total of the goods traffic imported through Antwerp, Rotterdam, Stettin, Sassnitz, Rostock, Warnemunde, Wismar, Lubeck, Kiel, Hamburg, Bremen, Bremerhaven, Vegesach, Emden, all for the Reich. (The calculated figures for Rotterdam and Antwerp include deductions of the imports for national purposes, a move which makes the resultant per cent even more significant). Thirty and four-fifths per cent of the goods imported into Germany through twelve German ports, one Belgian, and one Dutch, thus enter by way of Rotterdam. The composition of such a significant amount of traffic is most interesting to one who seeks enlightenment on the subject of the role of Rotterdam in the past few years.

Imports into Rotterdam are classified under 123 headings. Study of these imports for transshipment to Germany reveals that certain ones are far more important than others. During the years 1933-1938, the commodity influx to Rotterdam registered a steady increase, as far as total tonnage was concerned. It may not be safely stated that this increase was due alone to Nazi importing for rearmament purposes, for these years of Nazi rule, 1933-1938, are coincidental with an era

of revival from depression in the business cycle. Furthermore, all commodities do not tend to move in the same cyclical paths. Therefore, certain minor shifts in the rank of the fifteen leading transitory imports for the period 1933-1938, as compared to the two previous six-year periods, 1927-1932, and 1921-1926, will not be discussed. The major interest, at this

time, should be focused upon the significant changes in composition of the fifteen leading imports, and the trends in tonnage, which were evidenced in the 1933-1938 period.

The tables below show the fifteen leading commodities, on the basis of total tonnage, for each of the aforementioned six-year periods:

Periods: 1921-1926	1927-1932	1933-1938
1—Iron and Mang. Ores	1—Iron and Mang. Ores	1—Iron and Mang. Ores
2—Coal, Coke, etc.	2—Wheat	2—Other Ores
3—Wheat	3—Timber	3—Wheat
4—Other Ores	4—Other Ores	4—Timber
5—Rye	5—Coal, Coke, etc.	5—Coal, Coke, etc.
6—Timber	6—All Mins. un d. etc.	6—Maize
7—Maize	7—Rye	7—Rye
8—All Mins. un d. etc.	8—Barley	8—All Mins., etc.
9—Barley	9—Maize	9—Soybeans
10—Oats	10—Groundnuts	10—Groundnuts
11—Copra	11—Soybeans	11—Raw Phosphates
12—Seeds	12—Seeds	12—Petrol
13—Groundnuts	13—Oats	13—Barley
14—Crude min. oils, etc.	14—Petrol	14—Wood for paper mfr.
15—Soybeans	15—Crude min. oils, etc.	15—Gasoil

If the imports for the years 1927-1932 are examined, and compared to those of 1921-1926, it will be seen that the composition of the fifteen leading commodities remains the same, with one exception. Copra disappears from the list, and petrol enters. Now if the years 1933-1938 are compared with the years 1927-1932, it will be seen that there are several changes in composition. Seeds, oats, and crude mineral oils disappear from the list; gasoil, wood for paper manufacture, and raw phosphates enter. These changes introduce materials which might find use in a country which was preparing for war. Gasoil, for industrial and other uses; wood for paper manufacture, for chemical industries; and raw phosphates for purposes of stimulating production on agricultural land, and perhaps for chemical uses.

A further examination of the trends of commodities such as iron and manganese ores, other ores, wheat, timber, etc., may be of some help in answering the question, "Just how much has gone into Germany?"

Iron and manganese ores may be considered as most essential commodities to a nation which is preparing for strife. Iron and steel play a most important part in the fabrication of bombs, guns, shells,

tanks and other military equipment. Fig. 31 shows the trend of iron and manganese ore imports through Rotterdam for Germany, as compared to the total German imports of iron and manganese ores from all sources, and by all methods of transport.

For the five years, 1933-1937, the imports of iron and manganese ores through Rotterdam represented thirty per cent of the total amount of those ores going into Germany from all sources¹. This one comparison alone entitles Rotterdam to much consideration as a port which is most important to the easy maintenance of German heavy industry in the Rhine-Ruhr areas.

The second most important import through Rotterdam is entitled "Other Ores"². Here again is an important group of ores, and from 1933 through 1937 there has been a steady increase in their importation. Fig. 32 shows the general upward swing of these transitory ores.

On the following pages may be seen the graphic story of the other leading commodities which are transhipped at Rotterdam and enter the Reich for use there. From these graphs may be gained an approximate conception of the total tonnage of each commodity transhipped to

1—Total German statistics for 1938 not obtainable by author. In Rotterdam the 1938 imports showed approximately a twenty per cent increase over the 1937 imports, and the first half of 1939 registered an increase over the first half of 1938.

2—Due to uncertainty over total component parts of Dutch and German classifications of "Other Ores", the German figures have been omitted. Rotterdam imports for 1938 showed an increase over imports for 1937.

Germany at Rotterdam (see Fig. 31 through 40).

Considered as a whole, the fifteen preceding graphs reveal several important features. They provide a concept of the total tonnage transshipped at Rotterdam to Germany. They contribute a partial answer to the questions, "What commodities have gone into Germany?" and "How much has gone into Germany since 1933?" They illustrate commodity trends, and they show, by their composition, the true role of the port of Rotterdam. Rotterdam is a focal point for transshipment to Central Europe of bulk goods, foodstuffs, and raw materials for industry. This activity is the basis of the rapid rise of the port of Rotterdam. The prosperity of the port rises and falls with the prosperity of the Central European hinterland.

The geographic location of Rotterdam, at the mouth of the navigable Rhine and at the natural breaking point for sea and river traffic, has been the basis of its growth. Adequately open, on the one hand, to the North Sea and the Atlantic, and, on the other hand, to the vast Central European hinterland, Rotterdam of late had been the foremost port of Continental Europe, and with the restoration of peacetime conditions, it is most likely that Rotterdam will continue to be the most significant continental port of transshipment. Should Germany emerge the victor in the present conflict, in future years Rotterdam might well become the second largest port in the world, outranking London, and rivalling New York. With a British victory, the port of Rotterdam will drop in importance for a few years, due to unsettled conditions in Central Europe, and then surge again to high rank among world ports.

The port has seen, in 1938, her greatest year as far as total traffic movement is concerned. Geographically, Rotterdam is linked with Central Europe. It is the cheapest natural lane of transport for heavy commodities. As the years pass by, political boundaries may shift and shift again, countries and peoples may disappear, and commodity trends may take totally unexpected turns. As long as the Rhine and North Sea contacts maintain their present geographical advantages for Rotterdam, however, the role of the port will continue to be the transshipment of bulk goods to Central Europe.

Fig. 34—A gradual rise may be noted in the importation of coal, due to the rise of heavy industry in Germany. The drop of 300,000 tons in 1938 may be explained by the fact that this year German exports of coal fell two million tons below the 1937 figures. All, or part of these two million tons would more than explain the import drop.

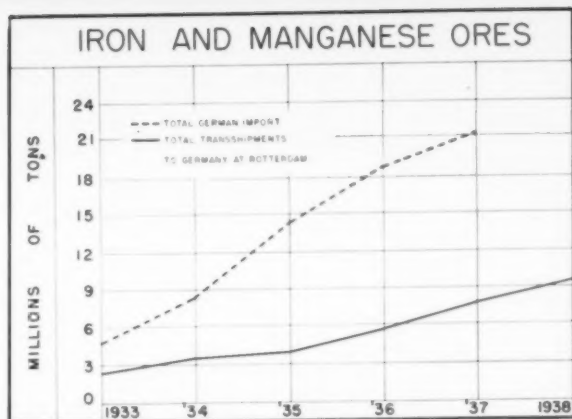


Fig. 31—From 1933 through 1937, thirty per cent of the total iron and manganese ores entering Germany were imported through Rotterdam.

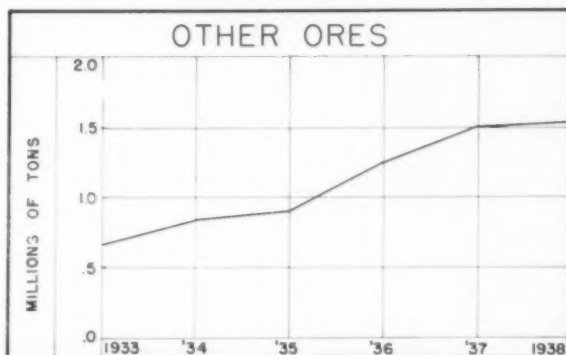


Fig. 32—The trend of ores (other than iron and manganese) follows the same upward movement shown by iron and manganese.

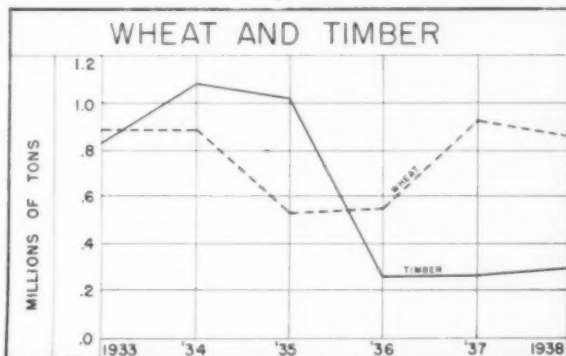
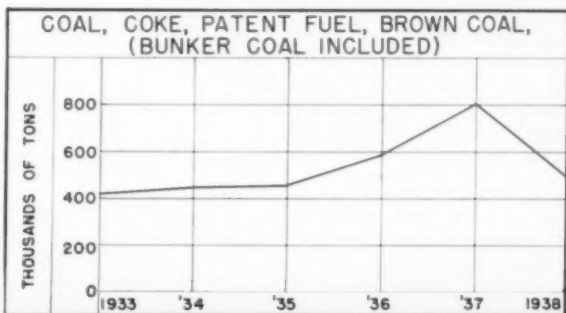


Fig. 33—*Wheat*: The tendency towards agrarian self-sufficiency hinted at in 1934 is seen developing most significantly in 1935-1936. Poor harvests in Central Europe in 1937 stimulated transshipments of wheat in this year to nearly a million tons. Heavy importing continued into 1938. *Timber*: Excessive exports from the major timber producing countries in 1933-1934 brought about a period of restricted exports from 1935 on to 1938. In 1934-1935 timber was the second most important transitory commodity. In 1936-1937 it fell to seventh.



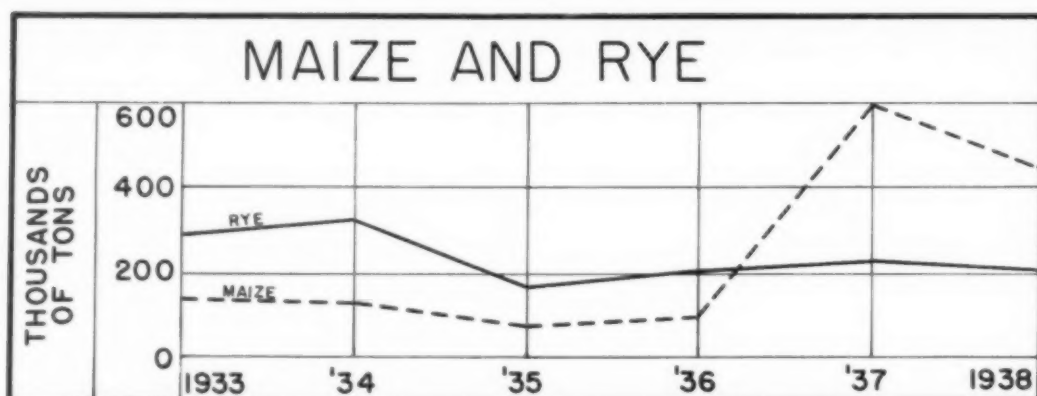


Fig. 35—*Maize*: This commodity follows the trend of wheat to a certain extent. The early trend to agrarian self-sufficiency may be noted, and then the heavy importing in 1937, due to unfavourable harvests in Europe. *Rye*: The fluctuation of rye is less marked than that of the other cereals, but the same trend is present on a smaller scale. A slight drop may be seen in 1935, and a slight increase in 1937.

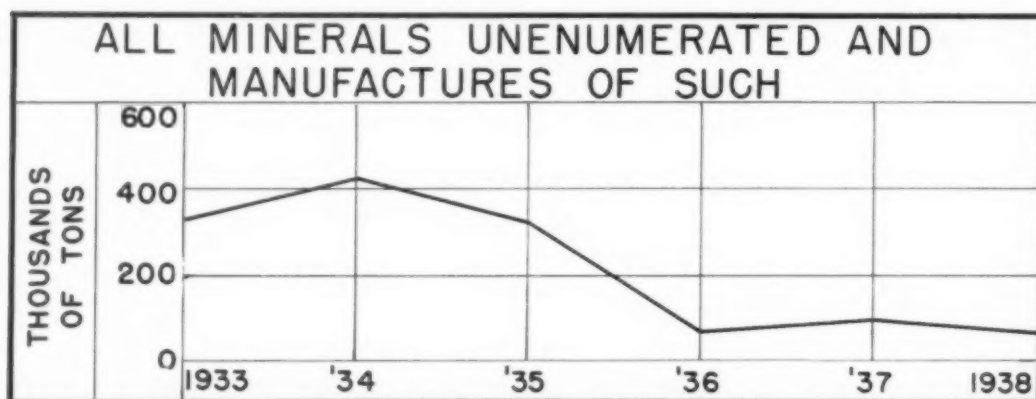
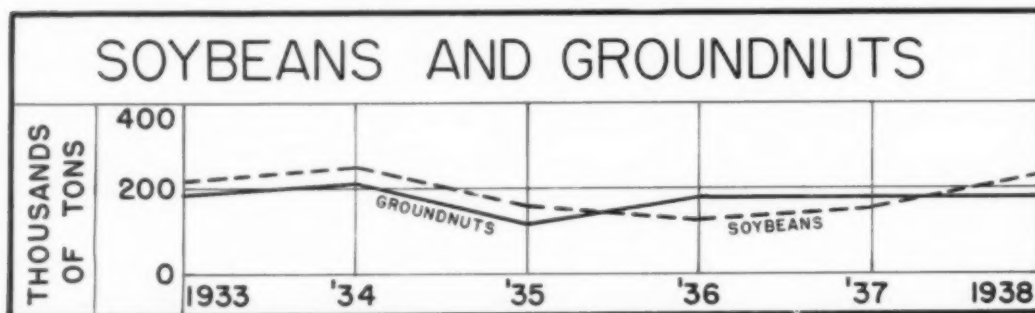


Fig. 36—Decreased imports of manufactured goods may explain their trend. With the rise of German industry this result might well be expected in import figures.

Fig. 37—Soybeans and groundnuts remained rather steady throughout the period. The amounts are small, and the importance, for Rotterdam, not too great.



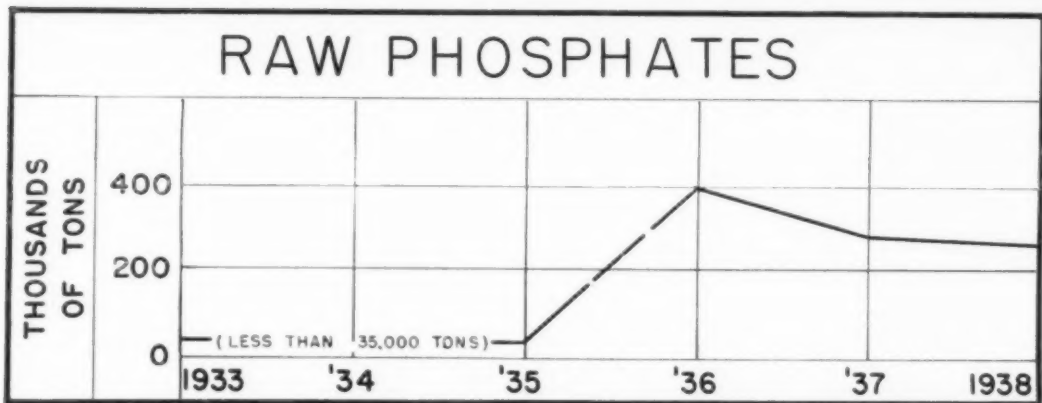


Fig. 38—Before 1936 raw phosphates as a commodity import did not rank among the thirty leading transitory imports. In 1936 this commodity soared to sixth place among the leading transitory imports. Although a small decline is noted in 1937 and 1938, raw phosphates rank sixth and eighth respectively in those years.

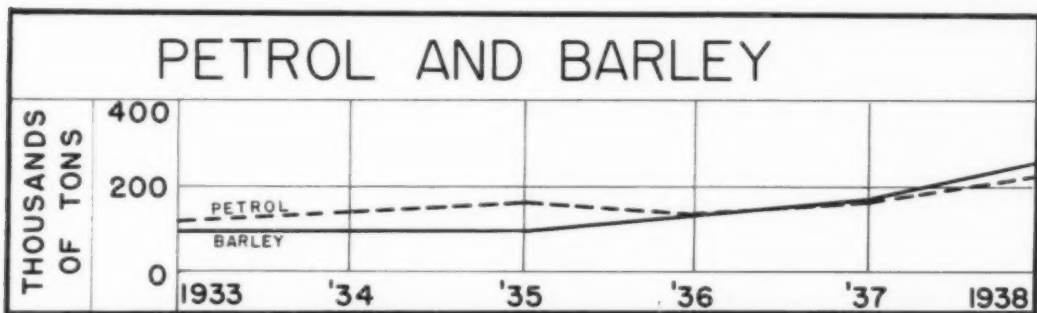
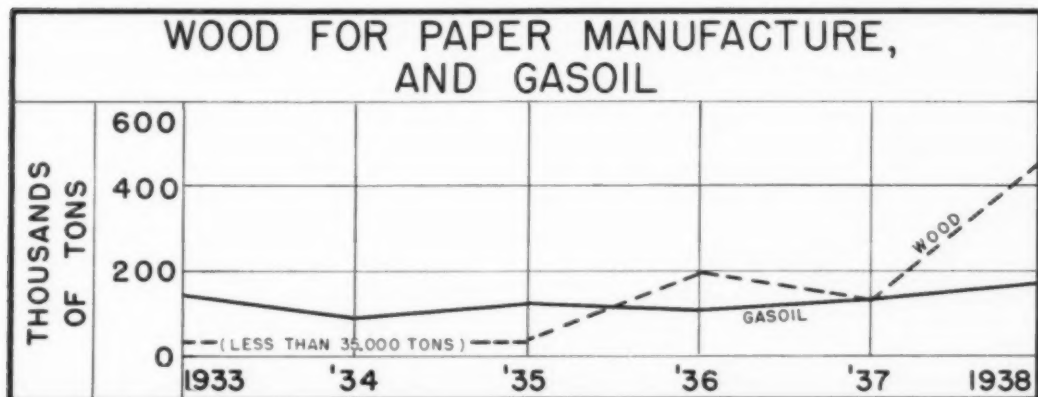


Fig. 39—*Petrol*: As an import this commodity is much more important in other lanes of entry into the Reich. The amount passing through Rotterdam remains rather steady.

Barley: This cereal shows a slow rise, and the importation to the Reich is rather small.

Fig. 40—*Wood for Paper Manufacture*: In 1935 wood for paper manufacture did not rank among the thirty leading transitory imports to Rotterdam. In 1936 it rose to fifth place. The trend is similar to that followed by raw phosphates.

Gasoil: Like petrol, this commodity remains rather steady. Here again other lanes of entry to the Reich are more important.





Early survey outfit, 1871, camped for the night. Red River carts and buffalo skinned teepee

OLD FORT GARRY IN 1881 AND 1939

by J. L. MORRIS

STANDING on the site of where old Fort Garry stood prior to the year 1882, I pictured to myself on this day in September, 1939, the Winnipeg of 1881, with Portage Avenue and Main Street gumbo-paved and nearly impassable, with the fort preventing Main Street from reaching the Assiniboine River, and the city's 8,000 population being more than sufficient for its limited housing accommodation.

As members of a Dominion Government Survey Party, just arrived from the East by rail, through the United States, we had pitched our tents on the banks of the Assiniboine River, while the authorities settled the matter as to whether we would follow the H. M. Aldous survey party, across the plains to the foothills of the mountains to the waters of the Bow River, or reach our goal via the Northern Pacific Railway to Bismarck, then along the 1,216 miles of the Missouri River by boat to Fort Benton, then north along the prairie trail about 325 miles to the junction of the Bow and Elbow Rivers in Alberta, (now the city of Calgary).

Within a few days, it being settled that we take the easier road, we returned the

way we came as far as Glynden Junction, and then along the Northern Pacific Railway to Bismarck on the Missouri River. Up-river boats were scarce, and for ten days we whiled away the time in camp on the bank of the river, waiting for the forwarding of Sitting Bull's Sioux Indians, as they were transferred to their Reserve at Standing Rock.

About thirty years later, at Armstrong on the Transcontinental Railway, while discussing our past wanderings with Archie McDonald, Contract Superintendent, and the Superintending Engineer for the M. J. O'Brien, Ltd., a reference was made to Bismarck and the year 1881. This brought out the information that the same three had been at Bismarck on the same date and all starting out for the same purpose of prospecting the West.

This railway town, comprising mostly of tents and shacks, had little accommodation for travellers, but unlimited for the hard working railroad navvy, who could spend his evenings at many games of chance, and no matter what his capabilities as a gambler, could always qualify at "bingo". The stern-wheeler which we

boarded, called the *Far West*, was about 200 feet long, drawing about three feet of water and built so as to float over sand bars, with the aid of spars and a donkey engine, on the fore deck.

The dreariness of the night was often lessened as one listened to the leadman and the lookout sonorously repeat at all hours "three feet", "six feet" and "no bottom" as the rattle of the cable and drum ceased, and we knew that the boat had again slid into deep water. As the sand would pile up higher than the deck level, it was sometimes a question as to whether the sand or the boat would win.

As some time was spent in the pilot house, *Old Times on the Mississippi* by Mark Twain was brought back, as each old river man would explain how he would attack a sand bar, by observing the shadows and shades, though the Missouri River was a very much coloured stream, due to the corrosion of its sand banks.

The only other refreshment, excepting the river water, was that handed out through a small window by a French-Canadian bartender, who dispensed a little whisky, considerable water and bluestone, a drink which met with the approbation of the deck hands below, in preference to their straight whisky which was always on view in a ten-gallon keg but never sold. It was toward the end of this river voyage that James J. Hill, the railway magnate, a passenger on exploration ahead of the railway construction, proffered to me his little phial of essence of camphor for a speedy cure from the ill effects of the river water.

On board the *Far West*, and especially on the lower deck among the crew, were representatives from many nationalities — negro, Mexican, Swede, half-breed and Chinaman, who slaved at every stop of the boat, loading and unloading, but who lolled around or gambled when time was otherwise heavy on their hands. On the upper deck were miners, fur-traders, prospectors, and the forerunners of business who follow closely behind the building of a continental railway. There was diversion at times; the

river has a tortuous course, and at one point the passengers walked across a neck of land while the boat took six or seven hours to go around the twenty-four mile bend. Five elk and three calves swam across the stream in front of the boat, while the captain warned the anxious rifle men that not a shot was to be fired. An Indian, his squaw and papooses sat on the bank with their pile of roots behind them waiting for the steamer that required such high-class fuel in preference to the cottonwood. As his flour, coffee and other supplies were put ashore, he pointed to his supplies. The squaw, after considerable trouble, shouldered the flour, the children picked up the balance, while he wrapped his blanket about him, lighted his pipe and brought up the rear.

At Fort Benton, the head of navigation on the Missouri River, our party was outfitted by I. G. Baker and Co. with waggons, horses and everything necessary for a season's survey on township outline work.

Our outfitters had difficulty in securing a cook, so a round-up of the town was made. Perched on a post on the principal street was Scotty Hogg, enjoying a good Scotch song, who was ready to go anywhere and to cook anything, and who made soda bread and good plum duff.

The trail to the north toward Fort Calgary was that made by the ox-teams of the freighters on the prairie, being the marks of the wheels with a ridge between them. Our first stop was at Teuton River, where the cable ferry was managed and run by two Indians, resplendent in their paint and coloured blankets.

A day was spent at Teuton crossing, the two weeks spent on the steamer *Far West* making it necessary to boil our clothes, as hundreds of Sioux Indians,

Bottom left:—Red River carts. A typical band such as crossed the prairies on dusty trails. These carts were home-made; the wheels were not shod, neither were the horses. The harness consisted of collar, saddle and fittings.

Below:—Historic Fort Garry which faced the present city of Winnipeg. Lower Fort Garry, about twenty miles down the Red River, still stands.





McDermot's store — a good example of pioneer building. Note the rough hewn logs and thatched roofs; a dugout drinking trough in the foreground.



Top right:—"Pile of Bones"—the old name for Regina

squaws and papooses had vacated it only a few days before.

It was now near the end of the month of June and mosquitoes and bull flies were bad. With mosquito netting, oil and smudges, the human part of our expedition managed to protect itself. Our animals were not as fortunate. Their only protection was from the swish of their tail, the poke of their muzzle, or a roll over when their harness was removed. Smudges were built at every stop, and the horses would crowd to get nearest to the densest smoke, but the flies sometimes won out by the constant bleeding. Prince lay down, and could not get up. He was stripped of his harness, greased from head to foot, covered with a blanket with holes cut for eyes and nostrils, and left on the prairie with all kinds of insects around him. Five days later, he caught up with the party and was soon in harness again. We soon left that section where at every mouthful we had to skim the mosquitoes from our tea.

Nearing St. Mary's River crossing, and approaching the Blood Reserve, a band of mounted Indians, galloping down the trail and coming like a cattle stampede, soon surrounded us. They had heard that buffalo had been seen south near the boundary line, and were on their way, and wanted cartridges for their magazine rifles. This band was part of the Blackfeet tribe, who, four years earlier, made treaty with Lieut.-Governor Laird, and had settled down on their reserve. The good judgment of the Indian superintendent and the leadership of Chief Crowfoot, in handling the lands of this tribe, leaves them to-day the wealthiest and happiest nation of Indians in Canada.

At Belly River crossing, we were stalled owing to flood, and transported a large boat eight miles from Fort McLeod to ferry our outfit across. At Fort McLeod we met Mr. Aldous and his party. With him, as an assistant, was Charles A. McGrath, O.L.S. who, as surveyor, poli-

tician, and International Boundary Chairman, became one of Canada's foremost citizens. I saw Mr. Montague Aldous again on September 30th, 1939, at the Manitoba Club, Winnipeg, where he was celebrating his 89th birthday.

At Fort McLeod, the Commanding Officer was Colonel McLeod and his subordinate officer, Major Crozier. The fort was the usual log buildings with a stockade surrounding. Between Forts McLeod and Calgary we met a dark whiskered man, John Glenn, riding one of a team, on his way to Fort Benton for a reaper. The first settler, he had his ranch at the High River crossing, and irrigated his land from the river above.

The summer was spent by our party laying out blocks six miles square for cattle ranches on the waters of the Bow, High, Sheep Creek, Pine Creek and Elbow Rivers. This area had a luxuriant growth of wild vetch or pea vine. While engaged on this work we had a visit from the Marquis of Lorne, then Governor General of Canada, who, with his party, left Winnipeg and drove across the plains via Edmonton, Calgary and McLeod to Helena in Montana, the head of rail. Fort Calgary, situated on the west side at the junction of the Bow and Elbow Rivers, comprised a small log building with the usual stockade. The Crown was represented by Captain Cotton (afterwards General Cotton) and four policemen. I. G. Baker and Co., also situated on the west side of the Elbow River, had a large log store. On the east side were the Hudson's Bay Company and Captain Drury's ranch. The government farm was three miles farther down the Bow River.

We left camp early in the day, and, during the progress of the work, fearsome clouds appeared from the north-west. The storm burst with rain, hail and wind, and as we lay on our faces on the open prairie, protecting our heads with our arms, hailstones as large as walnuts battered us and our instruments. Everything within an area of five miles by half a mile was levelled, and all birds killed, among them an eagle. One finger was broken, heads covered with bumps, and backs, legs and

Right: — Fort McLeod. A cluster of one-story frame buildings built after 1878.

arms were black, red and blue. On the 22nd of September our work was complete, and was signaled by a fall of six inches of snow.

We faced south and arrived at the Willows, just north of Fort McLeod on September 25th; Indians were moving north in numbers, all jubilant, and displaying many Canadian one dollar bills, the winnings from the whites at the horse races, shooting and other sports given in honour of the Governor General. The trader's horse was leading, the Indians thought that this would not do, and, crowding on to the course, forced the leader to shy off, enabling their horse to win.

Leaving St. Mary's River crossing September 27th, where we found seams of coal, our trail was due east toward Winnipeg. From here to Fort Walsh, our trail was known by recognized camping places along the route. To Chin Coulee there was no water for thirty miles, and, at another thirty miles, at Seven Persons Coulee, was a never failing spring under a very large boulder in the bank. It was here that Colonel Irvine of the Mounted Police and Commandant of Fort Walsh passed us on his way to the fort.

Approaching Fort Walsh, across the plateau of the Cypress Hills through a foot of snow, we camped a mile away, looking down on the fort below. The town had one store and one hotel whose only female inhabitant was a negress, who claimed to be the only white woman in Fort Walsh. We left Fort Walsh on October 6th. In the distance of 350 miles to Fort Qu'Appelle, we saw only one abode — that of a Cree Indian, camped in the Sand Hills, comfortable in his teepee with his squaw and papoose.

During these three weeks we picked up on our way a Mounted Police waggon and



destitute Indians; traded our waggons for carts; lost the trail when all would stop, while two of the party going in opposite directions would drag one foot behind until the trail ridge was found under the snow. On the 15th at Swift Current Creek, we saw the first signs of the Canadian Pacific preliminary location surveys, and the last four buffalo. Snow blindness was common, and we used the Indian treatment of balsam gum. On the 25th the snow had all gone, and we were following the Canadian Pacific Railway location.

Our view of the valley of the Qu'Appelle River, after seeing so much level prairie, was impressive, with the cultivated farms, winding river and beautiful lakes. Major Sam Steele was in charge of Fort Qu'Appelle. Our first sign of railway construction was at Pile of Bones (Regina). At Flat Creek Daniel Mann was just finishing a sub-contract of Slush Scraper work.

On the 12th of November we arrived at the end of steel, and spent Sunday at Brandon, then a collection of tents. At church in a large tent was Clifford Sifton, with his father, mother, brother and sister. We arrived at Winnipeg on the 14th of November and in a few days left for the East. The fort was still standing. As I looked around the old site on September, 1939, and questioned old and young as to the site of the walls of the old fort, nobody seemed to know.

Main Street, Winnipeg, in 1878, Dickson and Hunt's store — on the extreme left of the picture — was on the site where Childs Restaurant now stands and where Portage Avenue turns off Main Street to the left.





(NOTE—There's a keen and searching wind blowing across the world to-day. This wind is sorting out the wheat from the chaff,—whether it be nations, man-made social systems . . . or individuals. It is the ultimate testing time for all S. C. E.)

THE WINNOWING WIND

Sired by deadly malice, born of a broken word,
In shadowy secret places an evil offspring stirred;
Creeping from haunts of cunning men and fanned by poisoned breath,
A winnowing wind sighed thro the lands,—the *winnowing wind of death*;
In happy peaceful valley, on flower strewn uplands wide,
In town and drowsy hamlet, on lonely country side,
The roaring shout of 'Fatherland' and howling hounds of hate,
Have swelled the bitter winnowing wind,—the *winnowing wind of Fate*!

In lofty pillared halls of State, in cot and stately home,
By lonely lake and forest stream,—the testing time has come,
From ice sheathed Arctic headlands to sun drenched tropic strand,
Across the fertile fruitful fields to shimmering desert sands,
Across the weary wastes of foam where roll the Seven Seas,
Where swaying palm and stately pine nod to the friendly breeze,
The chaff is winnowed from the grain on world wide threshing floor,
By the keen breath of winnowing wind,—the *winnowing wind of War*!

Naked before the bar of Time now men and nations stand,
And some wear badge of craven fear and some foul treason's brand,
And some who boasted boast no more,—but bow their heads in shame,
And some now bear the mark of Cain,—and some the Judas name;
And some like slaving jackals, slink near the stricken field,
And some 'neath agonizing blows their precious birthright yield,
And Liberty lies fettered,— and all that life holds dear
Trembles before the winnowing wind,—the *winnowing wind of Fear*!

* * * *

High flies the chaff! In bloody mire deep lies the crimsoned grain,
And misery drab and sorrow bleak brood o'er the smoking plain;
But ringed by moat of flashing blue where white walled bastions rise,
Defiant streams a flag of Hope,—the flag of Britain flies!
And strong in ancient pride of birth, heirs of a mighty past,
To guard their threatened Motherland, the Empire's sons crowd fast;
And from across the tossing seas and lands of Empire broad,
Comes sound of mighty rising wind,—the *winnowing wind of God*!

S. C. ELLS

EDITOR'S NOTE-BOOK

Major the Honourable Pieter Voltelin Graham van der Byl, M.C., M.A., who contributes, by special request, an article for the Journal dealing with "South Africa's War Effort", is a native of South Africa. He was educated at the Diocesan College, Rondebosch, Cape Town, and Pembroke College, Cambridge, England. He served with distinction in the first Great War, being holder of Croix de Chevalier, Légion d'Honneur France. The writer, who is Member of Parliament for Bredasdorp, Cape Province, was appointed Minister Without Portfolio in 1939.

T. H. Manning, English explorer, educated at Harrow and Cambridge, has engaged in important exploration work in Canada. He has also visited Iceland, and his journey across Arctic Lapland has been described in R.J.O. Bray's book "Five Watersheds". The accompanying map was prepared by the Dominion Hydrographic and Map Service from sketches and notes by the author.

Arthur Lowe Burt was educated at Clark University, Worcester, Massachusetts, receiving his M.A. degree in 1939, and passing oral examinations for the degree of Ph.D. in Geography in 1940. The writer served as Instructor in Economic Geography at the University of Alabama 1940-41, and is now associated with the Division of Maps and Charts in the Library of Congress, Washington, D.C. Dr. Burt spent the summer of 1938 in geographic research in Holland.

Dr. J. L. Morris, who contributes "Old Fort Garry in 1881 and 1939", was born at McNab, Ontario. Following attendance at schools in Pembroke, he was graduated by the University of Toronto in 1881.

Four years later he received his C.E. (Toronto) and, the following year, his O.L.S. In 1927 he was granted his D. Eng. by his Alma Mater. In May, 1881, he left for the West, going by rail, steamboat and trail to Calgary, and returning across the plains by cart in November, 1881. This first-hand experience coupled with his scholastic training and employment in a wide range of pioneer construction including railway, hydro-electric, canal and bridge building, and other engineering projects provided further equipment for his historic article.

AMONGST THE NEW BOOKS

Strategical Map of the Far East. John Bartholomew and Son, London and Edinburgh. Price 2/6.

This new map by BARTHOLOMEW is an outstanding example of the beautiful cartography for which this firm has long been famous, and its publication is particularly timely. The map, on a scale of 1 over 10,000,000 or approximately 160 miles to one inch, covers the area from Singapore on the east to the New Hebrides, and from the northern tip of Australia to Manchukuo and Siberia. Insets show the whole Pacific Ocean and large scale maps of Singapore and Hong Kong where a Canadian Force has lately landed.

This map will have a wide appeal to the amateur strategist, showing as it does the trade routes and areas rich in resources which have, for the last ten years, been the objectives of Japanese expansionist policies. The line of Japanese naval and air bases on islands far into the Pacific is an indication of how long and carefully Japan has planned to protect herself from western interference in her plans for the domination of Asia.

The map is folded in pocket form, but the quality of the paper, presumably due to wartime restrictions, is such that it will not stand much refolding and would be better used as a wall map.

Man and his World. Book 1. The Evolution of the Old World. By JAMES MAINWARING, M.A. Geo. Philip and Son, London, \$1.15.

This book is the first of a series of three school text books by the same author designed to give the student, presumably of the twelve to fourteen year old class, a picture of the social, physical and religious forces which have been responsible for the moulding of humanity as it is to-day. To cover so wide a field within the limits of three small volumes the author, perforce, has resorted to broad generalizations. In the present volume he gives in the main a very adequate picture of the development of mankind up to the Feudal period and has been remarkably successful in integrating the different factors, geographical, social and moral, that were responsible for the development of the race. The reader may in some cases reasonably question both the author's statements and conclusions, but will leave the book with the feeling that it provides a very useful summary of the evolution of the ancient world.

Written as a text book it has not been designed for adult readers, and the author's habit of supplying definitions of many words in parenthesis has a tendency to interfere with the reader's enjoyment of the very excellent prose.

P. E. P.

ANNUAL MEETING OF THE CANADIAN GEOGRAPHICAL SOCIETY

The Society will hold its Annual General Meeting in the Lecture Hall, Victoria Memorial Museum, on February 18, 1942, at 8:30 p.m.